

BULLETIN 43

Bibliography of
New Mexico Geology
And Mineral Technology
Through 1950

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AND JOHN H. SCHILLING

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NEW MEXICO INSTITUTE OF MINING & TECHNOLOGY

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STATE BUREAU OF MINES AND MINERAL RESOURCES

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Introduction

GENERAL NOTE

In this bibliography are listed bulletins, articles, papers, and reports on the geology and mineral technology of New Mexico that have appeared from the earliest years through 1950. The term "geology" has been interpreted broadly; the list includes articles on such subjects as meteorites and the antiquity of man, which, though not strictly geological topics, are closely related to geology.

Part I, *Bibliography*, is a list of authors, arranged alphabetically. Each author's writings are placed under his name in chronological order and are numbered. Each title is given in full; explanatory notes added to the title by the compilers of this bibliography are enclosed in brackets. Following the title is the name of the publication, together with the series number. The volume and number of the periodical come next; then the page or pages on which the paper appears; notes on illustrations, if any; and finally the date.

Part II, *Index*, is an alphabetical list of subjects arranged under twelve major heads. These heads are subdivided according to the nature of the material indexed. One paper may be indexed under more than one head, but under each head the name of the author and the serial number of his paper follow appropriately. Using these data the reader can find the title and reference of the paper in the Bibliography, Part I. Further details regarding subdivision are given in the section preceding the Index.

Part III, *Maps*, is a list of maps of New Mexico other than geologic maps, which are included with the index. Explanatory remarks are given at the beginning of this section.

SOURCES OF INFORMATION

The papers listed in this bulletin through the year 1944 in large part have been taken from a previous bibliography entitled "Geologic literature of New Mexico through 1944," by Robert L. Bates and Marian R. Burks, issued in 1945 as Bulletin No. 22 of the State Bureau of Mines and Mineral Resources. Bulletins 746, 747, 823, 937, and 938 of the U. S. Geological Survey were also used as sources for these papers. Entries from 1945 through 1950 have been taken largely from U. S. Geological Survey Bulletins 949, 952, 958, 968, 977, and 985. A number of publications of local interest or dealing with mineral technology which were not covered by the U. S. Geological Survey Bulletins were examined by the compilers. Unpublished theses have also been included and for the most part were taken from the publication of the Petroleum Research Company, Denver, Colorado, entitled "Bibliography of geology theses."

ACKNOWLEDGMENTS

Grateful appreciation is extended to the following persons for their assistance in the compilation of this bibliography. Mr. Kenneth Reim, former student of the New Mexico Institute of Mining and Technology employed by the Bureau, spent considerable time on compilation. Mrs. Anne Dimock, of Antioch College, Ohio, whose husband attended the summer field camp at the New Mexico Institute of Mining and Technology, worked several months on research. Dr. Stuart A. Northrop, chairman of the department of geology, University of New Mexico, submitted omissions from Bulletin No. 22 which have been included in this bibliography. Mr. W. M. Speare, librarian, New Mexico Institute of Mining and Technology, gave his time and assistance to the compilers. Mrs. Constance Schilling helped by checking and typing the index. All members of the Bureau staff were very cooperative, and the suggestions and help from Dr. Eugene Callaghan, director, are greatly appreciated.

HOW PUBLICATIONS MAY BE OBTAINED

Many publications of the various governmental agencies may be obtained from the department or bureau of issue; there is a charge for some reports, but others will be furnished gratis. The stock of many bulletins has been exhausted. Whether or not a given publication of the U. S. Geological Survey is available, and its price, can be determined from a pamphlet entitled "Publications of the Geological Survey," issued in May 1953. This pamphlet may be obtained free of charge from the Superintendent of Documents, Government Printing Office, Washington, D. C.

Many volumes or numbers of periodicals may be obtained from the issuing society or association. Books, indicated in the bibliography by italic print, may be ordered from the publishers. Out-of-print periodicals and books occasionally may be found in the stock of dealers in secondhand books.

A stock of publications still in print relating to areas in New Mexico is kept at the State Bureau of Mines, in Socorro. Included among these, in addition to the Bureau's own publications, are publications of the U. S. Geological Survey and other organizations, a list of which, with prices, is presented at the end of this bulletin.

There are a number of New Mexico libraries where government and other publications cited in this bibliography may possibly be consulted: Albuquerque, University of New Mexico; Las Vegas, New Mexico Highlands University; Santa Fe, State Library Extension Service; Silver City, New Mexico Western University; Socorro, New Mexico Institute of Mining and Technology; State College, New Mexico College of Agriculture and Mechanic Arts.

The State Bureau of Mines and Mineral Resources will be glad to supply current data regarding the availability of New Mexico geologic literature and to assist in obtaining original, typewritten, or photostat copies.

SERIALS

The following list gives both the abbreviated citation and the full name of the periodicals and serials which have been examined in the compilation of the bibliography. The place of publication is given, if known.

Acad. Nat. Sci. Phila. Notulae Naturae; Proc.—Academy of Natural Sciences of Philadelphia Notulae Naturae; Proceedings. Philadelphia, Pa.

Acad. Sci. Paris Comptes Rendus—Académie des sciences [Paris] Comptes rendus. Paris, France.

Acad. Sci. St. Louis Trans.—Academy of Science of St. Louis Transactions. St. Louis, Mo.

Acta Crystallographica. Cambridge, England.

Am. Acad. Arts and Sci. Proc.—American Academy of Arts and Sciences Proceedings. Boston, Mass.

Am. Alpine Jour.—American Alpine Journal. New York City.

Am. Antiquity—American Antiquity. Menasha, Wis.

Am. Assoc. for the Advancement of Science Proc.—American Association for the Advancement of Science Proceedings. Washington, D. C.

Am. Assoc. Petrol. Geol. Bull.—American Association of Petroleum Geologists Bulletin. Tulsa, Okla.

Am. Ceramic Soc. Bull.; Jour.—American Ceramic Society Bulletin; Journal. Columbus, Ohio.

Am. Chem. Soc. Jour.—American Chemical Society Journal. New York City.

Am. Forestry—American Forestry.

Am. Geologist—American Geologist. Formerly published at Minneapolis, Minn.; consolidated with Economic Geology in 1905.

Am. Geophys. Union Trans.—American Geophysical Union Transactions. Washington, D. C.

Am. Inst. Min. Eng. Bull.; Trans.—American Institute of Mining Engineers Bulletin; Transactions. New York City. Superseded by American Institute of Mining and Metallurgical Engineers, 1918.

Am. Inst. Min. Met. Eng. Bull.; Contr.; Preprint; Tech. Pub.; Trans.; Yearbook—American Institute of Mining and Metallurgical Engineers Bulletin; Contribution; Preprint; Technical Publication; Transactions; Yearbook. New York City.

Am. Jour. Sci.—American Journal of Science. New Haven, Conn.

Am. Meteorological Soc. Bull.—American Meteorological Society Bulletin. Milton, Mass.

- Am. Midland Naturalist—American Midland Naturalist. Notre Dame, Ind.
- Am. Mineralogist—American Mineralogist. Ann Arbor, Mich.
- Am. Min. Cong. Jour.; Proc.—American Mining Congress Journal; Proceedings. Washington, D. C. See also International Mining Congress.
- Am. Mus. Nat. History Bull.; Jour.; Novitates—American Museum of Natural History Bulletin; Journal; Novitates. New York City.
- Am. Naturalist—American Naturalist. Salem, Mass., and elsewhere.
- Am. Philos. Soc. Proc.; Trans.; Yearbook—American Philosophical Society Proceedings; Transactions; Yearbook. Philadelphia, Pa.
- Am. Scientist—American Scientist. New Haven, Conn.
- Am. Soc. Civil Eng. Proc.; Trans.—American Society of Civil Engineers Proceedings; Transactions. New York City.
- Annales des Mines. Paris, France.
- Aquila. Budapest, Hungary.
- Ariz. Min. Jour.—Arizona Mining Journal. Later, The Mining Journal. Phoenix.
- Ariz. Bur. Mines Bull., Geol. Ser.—Arizona Bureau of Mines Bulletin, Geological Series. Tucson.
- Assoc. Am. Geographers Annals—Association of American Geographers Annals. Lancaster, Pa.
- Auk—The Auk. Lancaster, Pa.
- Boston Soc. Nat. History Proc.—Boston Society of Natural History Proceedings. Boston, Mass.
- Brooklyn Entomological Soc. Bull.—Brooklyn Entomological Society Bulletin. Brooklyn, N. Y.
- Bull. Am. Paleontology—Bulletin of American Paleontology. Ithaca, N. Y.
- Bur. Am. Ethnology Bull.—Bureau of American Ethnology Bulletin. Washington, D. C.
- Calif. Inst. Technology Thesis—California Institute of Technology Thesis. Pasadena.
- Calif. Jour. Mines and Geology—California Journal of Mines and Geology. Sacramento.
- Calif. Univ. Dept. Geol. Sci. Bull.; Mem.—California University Department of Geological Sciences Bulletin; Memoir. Berkeley.
- Canadian Naturalist. Montreal, Canada.
- Carnegie Inst. Washington Pub.; Yearbook—Carnegie Institution of Washington Publications; Yearbook. Washington, D. C.
- Carnegie Mus. Annals—Carnegie Museum Annals. Pittsburgh, Pa.
- Chem. and Met. Eng.—Chemical and Metallurgical Engineering. Changed to Chemical Engineering in 1946. New York City.
- Chem. Eng. Prog.—Chemical Engineering Progress. Philadelphia, Pa.

- Chem. Industries—Chemical Industries. Formerly Chemical Week. New York City.
- Chicago Univ. Thesis; Walker Mus. Contr.—University of Chicago Thesis; Walker Museum Contribution. Chicago, Ill.
- Chimie et Industrie. Paris, France.
- Cin. Soc. Nat. History Jour.—Cincinnati Society of Natural History Journal. Cincinnati, Ohio.
- Civil Eng.—Civil Engineering. Easton, Pa.
- Coal Age. New York City.
- Colo. Geol. Survey Bull.—Colorado Geological Survey Bulletin. Denver.
- Colo. Min. Assoc. Yearbook—Colorado Mining Association Yearbook. Denver.
- Colo. Mus. Nat. History Proc.—Colorado Museum of Natural History Proceedings. Denver.
- Colo. School of Mines Mag.—Colorado School of Mines Magazine. See Mines Magazine.
- Colo. School of Mines Quart.; Thesis—Colorado School of Mines Quarterly; Thesis. Golden.
- Colo. Sci. Soc. Bull.; Proc.—Colorado Scientific Society Bulletin; Proceedings. Denver.
- Colo. Univ. Studies; Thesis—Colorado University Studies; Thesis. Boulder.
- Colo.-Wyo. Acad. Sci. Jour.—Colorado-Wyoming Academy of Science Journal. Boulder, Colo.
- Columbia Univ. Thesis—Columbia University Thesis. New York City.
- Compass—The Compass. Menasha, Wis.
- Compressed Air Mag.—Compressed Air Magazine. New York City, and London, England.
- Condor—The Condor. Berkeley, Calif.
- Cornell Univ. Thesis—Cornell University Thesis. Ithaca, N. Y.
- Denison Univ. Sci. Lab. Bull.—Denison University Scientific Laboratories Bulletin. Granville, Ohio.
- Desert Mag.—Desert Magazine. El Centro, Calif.
- Earth Sci. Digest—Earth Sciences Digest. Revere, Mass.
- Ecology. Brooklyn, N. Y.
- Econ. Geology—Economic Geology. Urbana, Ill.
- Edinburgh New Philos. Jour.—Edinburgh New Philosophical Journal. Edinburgh, Scotland.
- El Paso Min. Jour.—El Paso Mining Journal. El Paso, Tex. No longer published.
- Eng. Jour.—Engineering Journal. Montreal, Canada.
- Eng. Min. Jour.—Engineering and Mining Journal. New York City.

Eng. Mag.—Engineering Magazine. New York City.
Eng. News. See Engineering News-Record.
Eng. News-Record—Engineering News-Record. New York City.
Evolution. Lancaster, Pa.
Explosives Eng.—Explosives Engineering. Wilmington, Delaware.

Field Mus. Pub. Geol. Ser.—Field Museum Publication, Geological Series. Chicago, Ill.
Fieldiana; Geology. Chicago, Ill.

Gems and Gemology. Los Angeles, Calif.
Geog. Rev.—Geographical Review. New York City.
Geographische Gesellschaft in München, Jahresbericht.
Geog. Soc. Chicago Bull.—Geographic Society of Chicago Bulletin. Chicago, Ill.
Geol. Soc. Am. Bull.; Mem.; Proc.; Special Papers—Geological Society of America Bulletin; Memoir; Proceedings; Special Papers. New York City.
George Washington Univ. Bull.—George Washington University Bulletin. Washington, D. C.
Geophysics. Austin, Tex.

Harvard Univ. Alumni Bull.; Thesis—Harvard University Alumni Bulletin; Thesis. Cambridge, Mass.

Ind. Acad. Sci. Proc.—Indiana Academy of Science Proceedings. Indianapolis.
Ind. Univ. Thesis—Indiana University Thesis. Bloomington.
Indust. and Eng. Chem.—Industrial and Engineering Chemistry. Washington, D. C.
Internat. Cong. Applied Chem.—International Congress of Applied Chemistry. Washington, D. C.
Internat. Geol. Cong. Comptes Rendus; Guidebook—International Geological Congress Comptes Rendus; Guidebook. Washington, D. C.
Internat. Geol. Cong., 18th, Great Britain, Rpt.—International Geological Congress, 18th, Great Britain, Report. London, England.
Internat. Min. Cong. Proc.—International Mining Congress Proceedings. Later, American Mining Congress.
Iowa Acad. Sci. Proc.—Iowa Academy of Sciences Proceedings. Des Moines.
Iowa Univ. Thesis—Iowa University Thesis. Iowa City.

Johns Hopkins Univ. Thesis—Johns Hopkins University Thesis. Baltimore, Md.
Jour. Geography—Journal of Geography. Chicago, Ill.
Jour. Geology—Journal of Geology. Chicago, Ill.

- Jour. Geomorphology—Journal of Geomorphology. New York City.
- Jour. Paleontology—Journal of Paleontology. Tulsa, Okla.
- Jour. Petrol. Technology—Journal of Petroleum Technology. Dallas, Tex.
- Jour. Sed. Petrology—Journal of Sedimentary Petrology. Menasha, Wis.
- Jour. Zool. Paris—Journal de Zoologie. Paris, France.
- Kaiserlich-Königliche Naturhistorische Hofmuseum Annalen. Vienna.
- Kans. Acad. Sci. Trans.—Kansas Academy of Science Transactions. Topeka.
- Kans. City Rev. Sci.—Kansas City Review of Science and Industry. Kansas City, Mo.
- Kans. Geol. Soc. Guidebook; Proc.—Kansas Geological Society Guidebook; Proceedings. Wichita.
- Kans. Univ. Paleont. Contr.; Sci. Bull.—Kansas University Paleontological Contributions; Science Bulletin. Lawrence.
- Kans. Univ., State Geol. Survey Bull.; Thesis—Kansas University, State Geological Survey Bulletin; Thesis. Lawrence.
- Kolloid-Zeitschr.—Kolloid Zeitschrift. Dresden-Blasewitz, Germany.
- Le Genie, Civil.
- Los Angeles Mus. Pub.—Los Angeles Museum Publications. Los Angeles, Calif.
- Mass. Inst. Technology Thesis—Massachusetts Institute of Technology Thesis. Cambridge.
- Mech. Eng.—Mechanical Engineering. New York City.
- Meteor. Soc. Contr.—Meteoritical Society Contributions. Los Angeles, Calif.
- Mich. Acad. Sci. Rpt.—Michigan Academy of Science Report. Lansing.
- Micropaleontologist—The Micropaleontologist. New York City.
- Min. and Contracting Rev.—Mining and Contracting Review. Salt Lake City, Utah.
- Min. and Eng. World.—Mining and Engineering World.
- Min. and Met.—Mining and Metallurgy. New York City.
- Min. and Sci. Press—Mining and Scientific Press. Consolidated with Engineering and Mining Journal in 1922.
- Min. Cong. Jour.—Mining Congress Journal. Washington, D. C.
- Min. Eng.—Mining Engineering. Washington, D. C.
- Min. Jour.—Mining Journal. Phoenix, Arizona. Formerly Arizona Mining Journal.
- Min. Mag.—Mining Magazine. No longer published.

- Min. Sci.—Mining Science. Apparently no longer published.
- Min. World—Mining World. San Francisco, Calif.
- Mineral Collector.
- Mineralogical Mag.—Mineralogical Magazine. London, England.
- Mineralogist—The Mineralogist. Portland, Ore.
- Mines Mag.—Mines Magazine. Denver, Colo.
- Mines and Methods. No longer published.
- Mines and Minerals. Name changed to Colliery Engineer in 1913.
- Minn. Univ. Thesis—University of Minnesota Thesis. Minneapolis.
- Natl. Acad. Sci. Mem.; Proc.—National Academy of Science Memoirs; Proceedings. Washington, D. C.
- Natl. Geog. Mag.—National Geographic Magazine. Washington, D. C.
- Natl. Research Council—National Research Council. Washington, D. C.
- Natl. Res. Commission—National Resources Commission. Washington, D. C.
- Natl. Res. Planning Board—National Resources Planning Board. Washington, D. C.
- Natl. Speleol. Soc. Bull.—National Speleological Society Bulletin. Washington, D. C.
- Nat. History—Natural History. New York City.
- Nature. London, England.
- Nature Mag.—Nature Magazine. Washington, D. C.
- Nautilus—The Nautilus. Philadelphia, Pa.
- Nebr. Geol. Survey Bull.—Nebraska Geological Survey Bulletin. Lincoln.
- Nebr. Univ. Thesis—University of Nebraska Thesis. Lincoln.
- Neues Jahrb. für Min., Geol., und Paläont.—Neues Jahrbuch für Mineralogie, Geologie, und Paläontologie. Stuttgart, Germany.
- New England Zool. Club Proc.—New England Zoological Club Proceedings. Harvard College, Cambridge, Mass.
- N. Mex. Bur. Immigration—New Mexico Bureau of Immigration. Santa Fe.
- N. Mex. Business Rev.—New Mexico Business Review. University of New Mexico, Albuquerque.
- N. Mex. College Agr. and Mechanic Arts, Exper. Sta. Bull.—New Mexico College of Agriculture and Mechanic Arts, Experiment Station Bulletin. State College.
- N. Mex. Geol. Soc. Guidebook—New Mexico Geological Society Guidebook. Socorro.
- N. Mex. Mag.—New Mexico Magazine. Santa Fe.
- N. Mex. Miner and Prospector—New Mexico Miner and Prospector. Albuquerque.

- N. Mex. Min. Record—New Mexico Mining Record. No longer published.
- N. Mex. Prof. Eng.—New Mexico Professional Engineer. Albuquerque.
- N. Mex. School of Mines, Mineral Res. Survey Bull.; Thesis—New Mexico School of Mines, Mineral Resources Survey Bulletin; Thesis. Socorro.
- N. Mex. School of Mines, State Bur. Mines and Mineral Res. Bull.; Circ.; Ground-Water Rpt.; Oil and Gas Rpt.—New Mexico School of Mines, State Bureau of Mines and Mineral Resources Bulletin; Circular; Ground-water Report; Oil and Gas Report. Socorro.
- N. Mex. State Eng. Bienn. Rpt.—New Mexico State Engineer, Biennial Report. Santa Fe.
- N. Mex. State Inspector of Mines Ann. Rpt.—New Mexico State Inspector of Mines Annual Report. Albuquerque.
- N. Mex. State Tax Commission—New Mexico State Tax Commission. Santa Fe.
- N. Mex. Univ. Bull. Geol. Ser.; Pub. Anthrop. Ser.; Chem. Ser.; Geol. Ser.; Meteoritics; Thesis—New Mexico University Bulletin, Geological Series; Publication, Anthropological Series; Chemical Series; Geological Series; Meteoritics; Thesis. Albuquerque.
- N. Y. Acad. Sci. Annals; Trans.—New York Academy of Science Annals; Transactions. New York City.
- Northwestern Univ. Thesis—Northwestern University Thesis. Evanston, Ill.
- Oil and Gas Jour.—Oil and Gas Journal. Tulsa, Okla.
- Oil Weekly. Houston, Tex.
- Okla. Acad. Sci. Proc.—Oklahoma Academy of Science Proceedings. Norman.
- Okla. Geol. Survey Bull.; Circ.; Mineral Rpt.—Oklahoma Geological Survey Bulletin; Circular; Mineral Report. Norman.
- Okla. Univ. Bull.—Oklahoma University Bulletin. Norman.
- Palaeontographica Americana. Ithaca, N. Y.
- Paleont. Bull.—Paleontological Bulletins (Cope). Philadelphia, Pa.
- Pan-Am. Geologist—Pan-American Geologist. No longer published.
- Pan-Am. Sci. Cong. Proc.—Pan-American Scientific Congress Proceedings. Washington, D. C.
- Penn. State Univ. Min. Indust. Exper. Sta. Tech. Paper; Thesis—Pennsylvania State University Mineral Industries Experimental Station Technical Paper; Thesis. State College.
- Petrol. Eng.—Petroleum Engineer. Dallas, Tex.
- Petrol. Refiner—Petroleum Refiner. Houston, Tex.
- Philos. Soc. Washington Bull.—Philosophical Society of Washington Bulletin. Washington, D. C.

- Plateau. Flagstaff, Ariz.
- Pit and Quarry. Chicago, Ill.
- Pittsburgh Univ. Thesis—University of Pittsburgh Thesis. Pittsburgh, Pa.
- Pop. Astronomy—Popular Astronomy. Northfield, Minn.
- Pop. Sci. Monthly—Popular Science Monthly. New York City.
- Precambrian—The Precambrian. Winnipeg, Canada.
- Preuss. Geol. Landesanstalt Jahrb.—Preussische geologische Landesanstalt Jahrbuch.
- Republic. Washington, D. C.
- Revue Universelle des Mines. Liége and Paris, France.
- Rock Products. Chicago, Ill.
- Rocks and Minerals. Peekskill, N. Y.
- Rocky Mountain Petrol. Rev.—Rocky Mountain Petroleum Review. Denver, Colo.
- R. Soc. Sci. Upsaliensis—Royal Society of Science. Upsala, Sweden.
- School of Mines Quart.—School of Mines Quarterly. Columbia University, New York City.
- Schweizer Min. und Petrogr. Mitt.—Schweizer mineralogische und petrographische Mitteilungen.
- Science. Washington, D. C.
- Sci. Am. Suppl.—Scientific American Supplement. New York City.
- Sci. Monthly—Scientific Monthly. New York City.
- Seismol. Soc. Am. Bull.—Seismological Society of America Bulletin. Berkeley, Calif.
- Smithsonian Inst. Ann. Rpt.; Expl. and Field Work; Misc. Coll.—Smithsonian Institute Annual Report; Explorations and Field Work; Miscellaneous Collections. Washington, D. C.
- Soc. Geol. de France Bull.—Société Géologique de France Bulletin. Paris, France.
- Soc. Research on Meteorites Contr.—Society for Research on Meteorites Contribution. (See Meteoritical Society.)
- Soil Science. Baltimore, Md.
- Southern Calif. Acad. Sci. Bull.—Southern California Academy of Sciences, Bulletin. Los Angeles.
- Southern Calif. Univ. Thesis—University of Southern California Thesis. Los Angeles.
- Southwestern Assoc. Petrol. Geol. Bull.—Southwestern Association of Petroleum Geologists Bulletin. (Continued as American Association of Petroleum Geologists Bulletin.)
- South-Western Mines. Albuquerque. No longer published.
- Stanford Univ. Thesis—Stanford University Thesis. Stanford, Calif.
- Stone. Chicago, Ill.
- Technology Quart.—Technology Quarterly and Proceedings of the

Society of Arts. Earlier, Technology Quarterly. Massachusetts Institute of Technology. Boston.

Texas Acad. Sci. Proc.; Trans.—Texas Academy of Science Proceedings; Transactions. Austin.

Texas Archeol. and Paleont. Soc. Bull.—Texas Archeological and Paleontological Society Bulletin. Abilene.

Texas Geol. Survey Ann. Rpt.—Texas Geological Survey Annual Report. Austin.

Texas Jour. Sci.—Texas Journal of Science. San Marcos.

Texas Technological College Thesis. Lubbock.

Texas Univ. Bull.; Mineral Survey Bull.; Pub.; Thesis—Texas University Bulletin; Mineral Survey Bulletin; Publication; Thesis. Austin.

Texas Univ., Bur. Econ. Geol. Pub.; Rpt. Inv.—Texas University, Bureau of Economic Geology Publications; Report of Investigation. Austin.

Torreya. Lancaster, Pa.

Tufts College Studies—Tufts College, Mass.

Tulsa Geol. Soc. Digest—Tulsa Geological Society Digest. Tulsa, Okla.

U. S. and Mexican Boundary Survey (Emory)—Report on the United States and Mexican Boundary Surveys . . . (in charge of W. H. Emory).

U. S. Bur. Mines Bull.; Econ. Paper; Inf. Circ.; Mineral Res.; Rpt. Inv.; Tech. Paper—United States Bureau of Mines Bulletin; Economic Paper; Information Circular; Mineral Resources; Report of Investigation; Technical Paper. Washington, D. C.

U. S. Bur. Soils Bull.; Circ.; Field Operations—United States Bureau of Soils Bulletin; Circular; Field Operations. Washington, D. C.

U. S. Cong., Sess., S. Ex. Doc.; H. Ex. Doc.—United States Congress Session, Senate Executive Document; House of Representatives Executive Document. Washington, D. C.

U. S. Dept. Agr., Exper. Sta.; Soil Conserv. Ser.—United States Department of Agriculture Experiment Station; Soil Conservation Service. Washington, D. C.

U. S. Dept. Interior Press Mem.—United States Department of the Interior Press Memoranda. Washington. D. C.

U. S. Geog. and Geol. Survey Rocky Mt. Region (Powell)—United States Geographical and Geological Survey of the Rocky Mountain Region (in charge of J. W. Powell).

U. S. Geog. Survey West of the 100th Meridian (Wheeler)—United States Geographical Survey West of the 100th Meridian (in charge of Lt. George M. Wheeler).

U. S. Geol. and Geog. Survey Terr. (Hayden)—United States Geological and Geographical Surveys of the Territories (in charge of F. V. Hayden).

U. S. Geol. Survey Ann. Rpt.; Bull.; Circ.; Coal Inv.; Geol. Atlas; Geol. Quad. Map; Geophys. Inv.; Index to Geol. Mapping; Memo. for the Press; Mineral Inv.; Mineral Res.; Mon.; Oil and Gas Inv.; Prof. Paper; Strategic Minerals Inv.; Topog. Atlas; War Minerals Rpts.; Water-Supply Paper.—United States Geological Survey Annual Report; Bulletin; Circular; Coal Investigations; Geologic Atlas; Geologic Quadrangle Map; Geophysical Investigations; Index to Geologic Mapping; Memoranda for the Press; Mineral Investigations; Mineral Resources of the United States; Monograph; Oil and Gas Investigations; Professional Paper; Strategic Minerals Investigations; Topographic Atlas; War Minerals Reports; Water-Supply Paper. Washington, D. C.

U. S. Natl. Mus. Bull.; Proc.—United States National Museum Bulletin; Proceedings. Washington, D. C.

U. S. Pacific R. R. Expl.—United States (War Department) Pacific Railroad Explorations (U. S. 33d Congress, 1st session, House of Representatives Ex. Doc. 129, v. 18, pts. 1-4). Reports of explorations and surveys to ascertain the most practicable and economical route for a railroad from the Mississippi River to the Pacific Ocean, made . . . in 1853-54 . . . (U. S. 33rd Congress, 2d session, Senate Executive Document 78 and House Executive Document 91).

U. S. Treasury Dept.—United States Treasury Department. Washington, D. C.

U. S. [War Dept.] Chief Eng. Ann. Rpt.—United States [War Department] Chief of Engineers Annual Report. Washington, D. C.

Upsala Univ. Geol. Inst. Bull.—Upsala University Geological Institute Bulletin. Upsala, Sweden.

Utah Acad. Sci. Proc.; Trans.—Utah Academy of Science Proceedings; Transactions. Provo.

Utah Dept. Pub. Indus. Dev. Bull.; Circ.—Utah Department of Publicity and Industrial Development Bulletin; Circular. Salt Lake City.

Washington Acad. Sci. Jour.; Proc.—Washington Academy of Science Journal; Proceedings. Washington, D. C.

West Texas Geol. Soc. Guidebook—West Texas Geological Society Guidebook. Midland, Tex.

World Oil. Houston, Tex.

World Petrol.—World Petroleum. New York City.

Yale Univ. Peabody Mus. Mem.—Yale University Peabody Museum Memoirs. New Haven, Conn.

Zeitschr. Geomorphologie—Zeitschrift für Geomorphologie. Leipzig, Germany.

Zeitschr. Kryst.—Zeitschrift für Krystallographie und Mineralogie. Leipzig, Germany.

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Report of his examination of New Mexico in the years 1846-1847: U. S. 30th Cong. 1st Sess., S. Ex. Doc. 23, p. 3-130, map, 1948; H. Ex. Doc. 41, p. 417-546, map, 1848.

Adams, F. C.

An investigation of the zonal arrangement of mineral deposits in New Mexico: Minn. Univ., M.S. thesis, 1924.

Adams, John Emery. See also Page, L. R., 1.

1. Triassic of west Texas: Am. Assoc. Petrol. Geol. Bull., v. 13, no. 8, p. 1045-1055, 2 figs., Aug. 1929.
2. Anhydrite and associated inclusions in the Permian limestones of west Texas: Jour. Geology, v. 40, no. 1, p. 30-45, 1932.
3. Origin, migration, and accumulation of petroleum in limestone reservoirs in the western United States and Canada: *Problems of Petroleum Geology*, p. 347-363, Am. Assoc. Petrol. Geol., 1934.
4. Oil pool of open reservoir type [with discussion by W. B. Wilson]: Am. Assoc. Petrol. Geol. Bull., v. 20, no. 6, p. 780-796, 5 figs. incl. index map, June 1936; [abs.] World Petrol., v. 7, no. 8, p. 404, Aug. 1936.
5. (and others). Standard Permian section of North America: Am. Assoc. Petrol. Geol. Bull., v. 23, no. 11, p. 1673-1681, Nov. 1939.
6. Upper Permian Ochoa series of Delaware basin, west Texas and southeastern New Mexico: Am. Assoc. Petrol. Geol. Bull., v. 28, no. 11, p. 1596-1625, 4 figs. incl. index map, Nov. 1944.
7. (and Frenzel, Hugh N.). Capitan barrier reef, Texas and New Mexico: Jour. Geology, v. 58, no. 4, p. 289-312, illus., July 1950.

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Geologic maps. Maps showing by colors, patterns, or symbols the areas of outcrop and ages of the rock units. Does not include maps as illustrations in papers.

Geophysics. Papers covering gravity, magnetitic, resistivity, seismic, radioactivity, and other geophysical methods used to prospect for mineral deposits and to determine structures; also general geophysical subjects.

Historical geology. Papers covering the description, history, correlation, or geographic extent of formations and other rock units.

Mineralogy. Papers giving mineral descriptions and localities. Also includes descriptions of meteorites.

Mineral technology. Covers prospecting and exploration, development, mining, including drilling for and recovery of oil and gas, concentration, processing, refining, and utilization of useful minerals (metals, nonmetallics, fuels, and water).

Paleontology. Papers describing or interpreting fossil remains of animals, plants, and early man.

Petrology. Covers descriptions of igneous and metamorphic rocks.

Physical geology. Papers on structural geology, erosion and sedimentation, and general physical geology.

Physiographic geology. Covers land forms and their formation as related to geologic structures and stratigraphy.

Water. Papers on underground and surface water resources, including water level, analyses, stream investigations and measurements, springs, wells, quality and quantity, floods, etc.

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- Cabezon Peak area, Sandoval County: Freeman.
- Canadian River Valley: Collins, W. D., 1, 2; Dalrymple; French, 1, 2, 3, 4, 5, 6, 7, 8, 9; Hinderlider, 2; Hoyt, 1, 4; May, C. A.; Murphy, E. C., 1; Neel, 1, 2, 3, 4, 5, 6, 7; Sidwell, 1; U. S. Geol. Survey, 10, 14; Williams, G. R.; Yeo, 1.
- Capitan Mountains, Lincoln County: Kelley, 2; Knapp; Soule, 4, 8.
- Carlsbad Caverns, Eddy County: Bretz, 2; Darton, 32; Haas, W. H.; Hess, 5; Horberg; Lee, 34, 38; Wetmore, 1.
- Catron County: Andersen, 1; Bush, F. V., 3; Darton, 3, 4, 34; Ferguson, 1, 2; Fries, 1; Henrich, 2; Herrick, C. L., 9; Kidder; Powers, 1, 2; Scott, D. B.; Spillsbury; Sur, 2; U. S. Bur. Mines, 6; Volin; Weatherby.
- Caja del Rio Puerco: Bryan, K., 25.
- Central New Mexico: Johnson, R. B.; Lee, 9; McCann, 2; Needham, 12, 13.
- Cerrillos Hills, Santa Fe County: Anon., 1; Blake, 3; Genth, 4; Harrington, E. R., 6; Johnson, D. W., 3; Stoll.
- Chaco Canyon: Bryan, K., 7, 13; Dodge; Vann, 1, 2.
- Chaves County: Brown, R. H.; Fiedler, 1, 2, 3, 5, 6, 7, 8, 9; Fisher, 2; McClure, 2; Meinzer, O. E., 8; Merritt; Morgan, 1; Nye, 3; Reed, W. M.; Rogers, 2; Schwade; U. S. Geol. Survey, 13.
- Chupadera Mesa: Keyes, 69.
- Cimarron Range, Colfax County: Smith, J. F., Jr., 2, 3.
- Coal Fields: *see Economic Geology and Mineral Technology*
- Colfax County: Anon., 16; Chase, C. A.; Claussen, 1; Gardner, J. H., 2; Griggs; Jones, F. A., 13; Judd, E. K.; Lakes, 4; Lee, 11, 13, 15, 17, 19, 23, 25, 30, 31, 33; Lesquereux, 3; Levings; McClure, 3; Mertie, 1, 2, 3; Ray, L. L., 1, 2, 3; Riggs, R. B.; Schrader, 1; Sheridan, J. E.; Sidwell, 8; Smith, J. F., Jr., 1, 2, 3; Stevenson, J. J., 8; Stobbe, 3.
- Cornudas Mountains, Otero County: Clabaugh, 1; Lang, W. T. B., 16; Timm; Zapp.
- Curry County: Antevs, 1, 6; Clark, W. T., Jr.; Cotter, 1, 2; Howard, E. B., 2; Hyatt, 1; Lohman; Sellards; Stock, 5; Theis, 1.
- DeBaca County: Allen, K.; Bryan, K., 6; Dempsey, 1, 2.
- Deming quadrangle, Luna County: Darton, 9, 14, 17, 18.
- Dona Ana County: Barker, F. C.; Bond; Dunham, 1, 2; Eames; Ford; Lee, 8; Lull, 2, 3; Reiche, 1, 3; Russell, P. L., 5; Sayre, 3; Slichter, 1, 2; Soule, 10; Stanton, 2; Stock, 1; Sur, 1; Taft; Trumbo; Welsh.
- Eastern New Mexico: Baker, C. L., 2; Clark, W. T., 1; Cox, W. B.; Hill, R. T., 6; Howard, E. B., 1;

Areas (continued)

- Johnson, W. D.; Lee, 29; Rich, J. L., 5; Roberts; Sidwell, 5; Van Diest, 1.
- Eddy County: Adams, J. E., 7; Ageton, 1, 2; Bailey, R. K.; Barr, J. A.; Bates, 1; Bretz, 2; Cathcart; Coghill; Conley; Cramer; Darton, 32; Davis, M. J.; Deford, 3; DeVaney, 1; Dickey, 1, 2; Fiedler, 1, 3, 5, 6, 7, 8, 9; Fisher, 2; Fuller, M. L., 2, 3; Haas, W. H.; Harley, 3, 4, 5, 6, 7; Haworth, 1; Hess, 5; Horberg; Hubbell; King, R. H., 1; Lang, W. T. B., 11; Lee, 34, 38; Mansfield, 3, 4, 5, 6; McClure, 2; Meinzer, 5; Morgan, 1, 2; Neel, 7; Nye, 3; Reed, W. M.; Renick, 3; Rich, A.; Smith, H. I., 1, 2, 3; Spicer, 1; Sterki; Storms, 3, 4; Theis, 9; West Texas Geol. Soc., 1; Wetmore, 1.
- Espanola Valley: Denny, 3.
- Estancia Valley, Torrance County: Keyes, 40; Meinzer, 1, 2.
- Florida Mountains, Luna County: Becker.
- Gallinas Mountains: Glass, 3; Kelley, 4, 6.
- Gallina quadrangle: Case, 4.
- Gila River region: Blake, 2, 6; Collins, W. D., 2, 3; Cope, 52; French, 1, 2, 3, 4, 5, 6, 7, 8, 9; Hayes; Herron, 2; Hinderlider, 2; May, C. A.; Merrill, 1; Neel, 1; Turner, S. F., 2; U. S. Bur. of Reclamation; U. S. Geol. Survey, 7, 12, 14; Williams, G. R.
- Gran Quivira quadrangle: Bates, 9.
- Grant County: Anon., 3, 10, 14; Bacon; Bagg, 1; Ballmer, 1, 2, 3; Barua; Birkinbine; Blood; Bush, 1, 2, 5, 7; Cady; Clifford, 2; Dinsmore, 2; Duriez; Entwistle, 1, 2; Furman; Graf; Harrington, E. R., 19, 30; Hayes; Hernon; Hill, R. S.; Kelley, 5; Kerr, P. F.; Knox, M. S.; Landon; Lang, S. S.; Larsh, 3; Lasky, 1, 6, 12, 14; Leach, F. I., 1; Luther; MacDonald, D. F.; May, A. J.; Michel; Morris; Mullen; Packard; Paige, 1, 2, 3, 4, 5, 6, 7, 9, 10, 11; Pickard; Ransome; Reid, G. D.; Rich, J. L., 1; Richard, F. W.; Rickard, 1; Rossin; Russell, P. L., 1, 4, 6; Schmitt, 1, 2, 4, 5, 6; Schwartz; Schwennesen, 1; Snow, 1, 2; Somers, 1, 2; Soule, 2, 5, 6, 7, 9; Stauber, 1; Storms, 6, 7; Umpleby; Wade, 1, 4; Waller; West Texas, Geol. Soc., 5; Wooton; Wright, I. L., 1, 2; Wuestner; Yeates; Zalinski, 1, 2.
- Guadalupe County: Dempsey, 2, 3, 4; Gibson, D. T.; Gorman; Holmquist, 2; Prout, F. S.; Stauber, 2; Teagle; U. S. Bur. Mines, 5.
- Guadalupe Mountains: Barker, C. L., 3; Burnet; Johnson, J. H., 2; Keyes, 77; Lang, W. T. B., 12; Nymeyer; Rickard, 2; Schultz; Shumard, B. F., 1, 2, 3, 4, 5; Tarr, R. S., 3.
- Harding County: Wendland.
- Hidalgo County: Fry; Huntington, M. G.; Jones, F. A., 4; Lasky, 4, 8; McClure, 1; Morrison, 2; Sauer; Schwennesen, 1, 2; Storms, 5; Turner, S. F., 1, 2, 3; Wade, 3; Wells, J. L.
- Jemez Mountains, Sandoval County: Church; Mansfield, 1, 2; Ross, 2, 4.
- Jornada del Muerto: Keyes, 14, 22; Lee, 6; Manning, C. L., 1; Shumard, G. G., 2.
- Kilbourne Hole: Reiche, 3.
- Koehler quadrangle, Colfax County: Lee, 31; Mertie, 3.
- Ladron Mountains, Socorro County: Kelley, 3; Noble.
- Las Vegas quadrangle, San Miguel County: Malmberg; Swanson; Williamson.
- Lea County: Anderson, C. C.; Anderson, W. D.; DeFord, 1; Denham; Miller, C. P.; Nye, 2, 3, 4; Theis, 7; Winchester, 4; Zavoico.
- Lincoln County: Campbell, 3; Hills, R. C., 1; Just, 1; Kelley, 6; Knapp; Patton, 1, 2; Sheridan, M. J., 1; Sidwell, 6, 7; Soule, 1, 4, 8; Talmage, 4; Wegemann.
- Little Florida Mountains, Luna County: Evans; Lasky, 11.
- Little Florida Mountains, Grant and Hidalgo Counties: Lasky, 10, 13.
- Llano Estacado: Baker, C. L., 1; Bretz, 3; Cope, 66; Cummins, 1; Price, W. A., 3; Theis, 2, 3, 5; West Texas Geol. Soc., 4.
- Los Pinos Mountains, Socorro County: Hurst; Stark, 1, 2, 3; Wilpolt.
- Lucero Mesa: Kelley, 3.

- Luna County: Becker; Darton, 7, 8, 9, 14, 17, 18; Evans; Fiedler, 4; Lasky, 11; Lindgren, 5; Russell, P. L., 2; Theis, 8; Twenhofel, W. S.; Wade, 2; White, W. N., 1, 2.
- McKinley County: Bryan, K., 10; Kirk, C. T., 1.
- Manzano Mountains: Reiche, 6.
- Mimbres Valley, Luna County: Darton, 8, 9, 14, 17; Fiedler, 4; Theis, 8; White, W. N., 1, 2.
- Mines: *see Economic Geology and Mineral Technology*
- Mining Districts: *see Economic Geology*
- Mogollon Mountains: Andersen, 2; Henrich, 2; Weatherby.
- Mora County: Austin, 1; Jahns, 7; McClure, 3; Northrop, 13; Sidwell, 8.
- Moreno Valley, Colfax County: Ray, L. L., 1, 3; Smith, J. F., 1.
- Mount Taylor area, Valencia County: Blodgett; Dutton, 2; Harrington, E. R., 2; Hunt, C. B., 1, 3, 4; Johnson, D. W., 6; Shimer, 1; Woods, B., 2.
- Nacimiento Mountains, Sandoval County: Northrop, S. A., 14.
- North-central New Mexico: Bisbee, 1, 2; Butler, R.; Emmons, S. F., 3; Lee, 17.
- Northeastern New Mexico: Baldwin; Collins, R. F., 1, 2; Conkling, 3; Drake; Garrett; Harley, 2; LaFaz, 3; Lee, 3, 18; Maher; Miller, B. F.; Read, 3; St. John; Sternberg; Stobbe, 1, 2; Van Diest, 2.
- Northern New Mexico: Bisbee, 1, 2; Brill; Case, 3; Colbert, 2; Conkling, 1, 2; Emmons, S. F., 3; Henbest, 2; Hill, R. T., 3; Jahns, 8; Judd, E. W.; Lee, 1; Needham, 12; Northrop, 16; Rankin; Read, 1, 5; Stevenson, J. J., 1, 2, 5; White, C. A., 16; Williston, 4; Wislizenus.
- Northwestern New Mexico: *see Areas, San Juan Basin*
- Oil and Gas Fields: *see Economic Geology*
- Organ Mountains, Dona Ana County: Dunham, 1, 2; Ford; Hunt, W. F., 1; Reiche, 1; Soule, 10; Stock, 1; Trumbo; Welsh.
- Otero County: Ball, S. H.; Botkin;
- Clabaugh, 1; Free; Lang, W. T. B., 16; Leesch; Meinzer, 3; Smith, H. T. U., 7; Timm; Wegemann; Zapp.
- Ortiz Mountains, Santa Fe County: Keyes, 45; Ogilvie, 3.
- Pecos River Valley: Collins, W. D., 1, 2; 3; Dalrymple; Fisher, 2; French, 1, 2, 3, 4, 5, 6, 7, 8, 9; Gardner, J. H., 8; Haliburton; Harrington, E. R., 18; Herron, 1; Hoyt, 1, 2, 3, 4; Lang, W. T. B., 6, 18; Lee, 5, 36; May, C. A.; McClure, 4; Means; Morgan, 2, 3, 4; Murphy, E. C., 1, 2; Nat. Res. Planning Board, 1; Neel, 1; Roach; Robinson, T. W., 1; Sayre, 1, 2; Semmes; Sidwell, 3; Stabler; Stafford; Taylor, T. U.; U. S. Geol. Survey, 10, 14; Williams, G. R.; Wrather.
- Pedernal Hills, Torrance County: Hurst.
- Permian Basin: *see Areas Chaves County, Eddy County, Lea County, and Southeastern New Mexico*
- Portales Valley, Roosevelt County: Robbins; Theis, 1, 6; U. S. Geol. Survey, 13.
- Quay County: Cummins, 2, 3; Dobrovolny, 1, 2; Hill, R. T., 1, 8; Keyes, 86; Marcou, 10, 11, 12.
- Raton Mesa, Colfax County: Knowlton, 3; Lee, 11, 15, 25; 30, 31; Levings, Mertie, 1, 2, 3.
- Raton quadrangle, Colfax County: Lee, 31; Mertie, 3.
- Rio Arriba County: Atwood, W. W., 2; Benjovsky, 2; Bryan, K., 29; Butler, A. P., 1, 2; Dane, 4; Harrington, E. R., 10; Henbest, 1; Hess, 6; Holmquist, 3; Jahns, 6; Just, 2; Larsen, E. S., 2; Lindgren, 3, 7; Northrop, 14; Silliman, B., 1; Smith, H. T. U., 1, 3, 4, 5, 6; Wells, E. H., 4; Wright, L. A.
- Rio Grande Canyon: Bryan, 18.
- Rio Grande Valley: Barker, F. C.; Bryan, 26; Case, 8; Collins, W. D., 1, 2, 3; Follansbee; French, 1, 2, 3, 4, 5, 6, 7, 8, 9; Girty, 3; Gordon, C. H., 2, 3; Happ, 1, 2; Henderson, J.; Herrick, C. L., 15; Herron, 1; Howard, C. S., 1; Hoyt, 1, 2, 4; Jarvis; Keyes, 34, 47, 68, 71; Lee, 6, 7, 12; McClure, 4; May, C. A.; Murphy, J. P.; Nat. Res.

Areas (continued)

- Committee, 1, 2; Needham, 8; Neel, 1; Nelson, J. W., 1, 2; Newell, F. H., 3, 4; Northrop, 4; Rittenhouse, 2, 3; Scofield; Slichter, 1, 2; Stabler; Taylor, T. U.; Theis, 4, 10; U. S. Geol. Survey, 2, 3, 4, 14; West Texas Geol. Soc., 4; White, C. A., 12; Williams, G. R.
- Rio Puerco Valley: Bryan, K., 12, 23; French, 1; Neel, 4; Renick, 2; Wright, H. E., 2, 3.
- Rio Salado Valley: Bryan, K., 9; Clark, J. D., 1; Harrington, E. R., 29.
- Roosevelt County: Fritz, W. C.; Robbins; Sellards; Theis, 1, 6; Woods, E. H., 1.
- Sacramento Mountains, Otero County: Bowsher; Laudon, L. R., 2, 3; Penn; Pray; Roswell Geol. Soc.; Stainbrook, 1.
- San Acacia area, Socorro County: Denny, 2.
- San Andres Mountains: Baker, C. L., 8; Herrick, C. L., 6.
- San Agustin Plains, Catron and Socorro Counties: Powers, 1, 2.
- Sandia Mountains, Bernalillo County: Ellis, 2; Harrington, E. R., 17; Hibben, 2, 3, 4; Keyes, 98.
- Sandoval County: Anon., 13; Barbour; Campbell, 2; Church; Clark, J. D., 1; Harrington, E. R., 12; Henbest, 1; Herrington; Jenks, 3; Kelly, C; Keyes, 10; Kutnewsky, 9; Mansfield, 1, 2; Neel, 6; Northrop, 14; Read, 4; Reagan, 1, 2, 3, 5; Renick, 1, 2, 4; Ross, 2, 4; Statz, 6; Wynkoop.
- Sangre de Cristo Mountains: Cabot; Conkling, 1; Dana; Gruner, 1; Healy; Lee, 26, 32; Northrop, 13; Ray, L. L., 2; Sidwell, 9, 10; Siebenthal, 1.
- San Juan Basin: Antevs, 4; Barb; Barnes, F. C., 1, 2, 3, 4, 5; Barrows; Bass, 1, 2; Bates, 6, 8, 10, 11; Bauer, 1, 2; Beaumont, 1, 2; Bradish, 1, 2; Bryan, K., 7; Coffin, 2; Colbert, 3; Collins, W. D., 1, 2; Colton; Cooper, C. F.; Cope, 7; Cross, 5; Dane, 1, 2, 3, 4; Darton, 5, 6; Dobyns; Dodge; Gardner, J. H., 3, 4, 9; Gazin; Gregory, 1, 2; Grinsfelder; Harrington, E. R., 23; Hendricks, 1, 2; Hintze; Hoover; Hunt, C. B., 3; Johnson, C. D.; Kelley, 10, 12; Kerr, J. L.; Keyes, 130; Kinney, 3; Kirk, C. T., 1; Larsen, R. M., 1, 2; Lilly; Matthew, 9; Moore, R. C., 1; Nowels; Peters, J. R.; Pike, 2, 3; Powell, J. W.; Read, 8; Reeside, 1, 2, 5; Reynolds, T. E., 3; Robinson, H. H.; Schrader, 1; Schuchert, 2; Sears, J. D., 1, 2, 3; Shaler, 1, 2, 3; Silver, 2, 3; Simpson, G. G., 8, 9; Simpson, J. H.; Sinclair, 1, 2; Tester; Umbach, 1, 2, 3, 4; Vann, 1, 2; Vokes; Waring, 1; Wengerd; White, C. A., 2; Williams, H.; Wilson, R. W., 1; Winchester, 3; Wood, F. E., 1, 2; Yeo, 2.
- San Juan County: Baker, A. A., 1; Bauer, 1, 2; Gilmore, 1; Hinson, 1, 2; Knowlton, 5; Stanton, 6.
- San Juan Mountains: Atwood, W. W., 2; Larsen, E. S., 2.
- San Miguel County: Allison; Clair; Dempsey, 3, 4; Fish; Gardner, J. H., 5, 8; Hobbs; Holmquist, 1; Jahns, 6; Krieger, 1; Malmberg; Neef; Northrop, 13; Read, 4; Springer, A.; Stott; Swanson; Williamson.
- San Pedro Mountains, Sandoval County: Northrop, 14.
- Santa Fe County: Anon., 1, 13; Berryman; Blake, 3, 4, 5, 8; Brinsmade, 3; Campbell, 1; Emerick; Emmanuel; Frick, 1; Gardner, J. H., 5; Genth, 4; Harrington, E. R., 6, 7, 13, 31; Henrich, 1; Herrick, C. L., 5; Jones, F. A., 3; Johnson, D. W., 5; Lakes, 1; Lee, 6, 20; Northrop, 1; Ogilvie, 2; Raunheim; Read, 2, 4; Reagan, 1, 5; Statz, 2, 4; Stearns, C. E., 1, 2; Stevenson, J. J., 3, 12; Stoll; Turnbull.
- Sierra County: Allen, C. A.; Chisholm; Clark, E.; Clifford, 1; Cope, 26; Dean, K. C.; Fishback; Fries, 1, 2; Genth, 2, 3; Glass, 1, 2; Harley, 1; Harrington, E. R., 15, 21; Herrick, C. L., 6; Hess, 1; Hill, J. M., 2; Jahns, 2, 4, 5; Keyes, 20, 38; Larsh, 1; Leatherbee, 1; Lee, 4; MacDonald, B.; MacFarlane, A.; Powell, W. C., 3; Rothrock, 1; Russell, P. L., 3; Sheridan, M. J., 2; Silliman, 5; Storms, 1, 2; Strock, 1, 2; Volin; White, C. A., 6.

- Silver City quadrangle, Grant County: Paige, 4, 7.
- Socorro County: Anderson, C., 1; Argall; Bagg, 2; Black, 1; Brinsmade, 2; Bryan, 5, 9, 19; Coleman; Dabney, 1, 2, 3, 4; Denney, 2, 4; Emmens; Gardner, J. H., 6; Glass, 1, 2; Gordon, C. H., 5; Graham; Grantham; Haddon; Hawkins; Herrick, C. L., 1, 2, 4, 14; Hill, J. M., 2; Hurst; Jahns, 2, 4, 5; Johnson, W. M.; Kelley, 3; Keyes, 3, 14, 19, 22; Koschmann, 1, 2; Lasky, 2; Loughlin; Needham, 6, 8; Noble; Peters, E. D.; Reid, H. F.; Russell, P. L., 7; Shumard, G. G., 2; Smythe, 3; Stark, 1, 2, 3; Statz, 1, 3, 7; Storms, 1, 2; Turner, H. W., 1; Tuttle; U. S. Bur. Mines, 3, 4; Wells, E. H., 2; Wilpolt; Winchester, 2; Wright, H. E., 1.
- Southeastern New Mexico: Adams, J. E., 6, 7; Anon., 23; Bartley, 1, 2; Blanchard; Boss; Bretz, 2, 4; Bybee, 1, 2, 3, 4; Cantrell; Carpenter, C. B.; Cole; Coon; Crandall; Darton, 23; Deegan; DeFord, 1, 2, 3, 4, 5, 6; Denison, A. R.; Dickey, 1, 2, 3; Ellison; Galley; Henderson, C. F.; Herrick, C. L., 16; Hoots; Kastrop; King, H. H., 1, 2, 3, 4; King, P. B., 1, 3, 4, 5; King, R. E., 1, 2, 3; King, R. H., 1, 2; Kroenlein; Lang, W. T. B., 2, 3, 4, 5, 6, 8, 9, 11, 12, 13, 17, 18, 19, 20, 21; Lee, 34, 35, 36, 37, 38; Lewis, 1, 2; Lloyd, E. R., 1, 2, 3; McGraw, R. M.; Melton, 3; Owen, E. W.; Parizek; Ray, B. A.; Rettger, 1, 2, 3; Rich, A.; Richardson, 1, 2, 3, 4; Secor, D. M.; Skinner; Vietti; Webb; West Texas Geol. Soc., 1, 2, 3; Winter; Woods, E. H., 1, 2.
- Southern New Mexico: Clabaugh, 2; Darton, 16, 19, 33; Emory, 1, 2, 3; Endlich; Fairbanks; Hall, J., 2; Marcou, 6; Parry, C. C.; Silliman, 4; Slichter, 2; Stevenson, J. J., 6; West Texas Geol. Soc., 6.
- Southwestern New Mexico: Blake, 7; Darton, 10; Harrington, E. R., 24; Lasky, 9; Laudon, 4; Schwennesen, 1, 2; Webster; Winchell.
- Taos County: Berliner, 2; Bush, 4; Butler, A. P., 1, 2; Butler, B. S., 2; Carman, 1, 2; Ellis, 8; Fain;
- Gruner, 1; Healy, F. G.; Hirschi, 1, 2; Holmquist, 4; Jahns, 3; Johnson, J. H., 3; Just, 2; Kelly, R. P.; Knaus, C. L., 2; Montgomery; Park, 1, 2; Powell, W. C., 2; Reed, E. F.; Roos; Schilling; Schwennesen, 1; Sidwell, 4; Siebenthal, 2; Silliman, 1; Soule, 3; Sundberg; Vanderwilt, 2, 3; Wood, J. A., 1; Young, J. A., 3, 5.
- Torrance County: Black, 1; Hurst; Keyes, 40; Meinzer, 1; Read, 4; Wilpolt.
- Tucumcari Mountain, Quay County: Cummins, 2, 3; Hill, R. T., 8; Marcou, 11.
- Tularosa Basin: Calvin; French, 1, 7; Harrington, E. R., 8; Meinzer, 3; Neel, 1; Powell, W. C., 1; Talmage, 1, 2, 3; U. S. Geol. Survey, 11.
- Union County: Brown, B., 3; Bryan, K., 24; Parker, B. H., 1; Stovall, 1; Van Tuyl, 2.
- Valencia County: Blodgett; Bryan, K., 36; Dutton, 2; Goddard, 1, 2; Harrington, E. R., 1, 2, 3, 9; Herrick, C. L., 9; Hunt, C. B., 1, 3, 4; Johnson, D. W., 2, 6; Kelley, 3; Kutnewsky, 2; McCann, 1; Nichols, 7, 8; Pike, 1; Read, 4; Reiche, 6; Robinson, H. F., 1; Shimer, 1; Wells, E. H., 2; Wilpolt; Woods, B., 2.
- Western New Mexico: Darton, 5; Winchester, 1.
- White Sands area: Botkin; Brady, F. W., 2; Calvin; Gould, 3; Harrington, E. R., 8; Herrick, C. L., 11; Keyes, 100; Needham, 9; Powell, W. C.; Talmage, 1, 2.
- Zuni Mountains: Dutton, 2; Goddard, 1, 2; Keyes, 80; Kutnewsky, 4; Schrader, 2.

Economic Geology

- Alum: Hayes.
- Anhydrite: Kroenlin.
- Apache mining district, Hidalgo County: Wade, 3.
- Apache mica mine, Rio Arriba County: Holmquist, 3.
- Artesia oil field, Eddy County: Davis, M. J.; Rich, A.
- Asphalt: Gorman.
- Atwood copper mine, Lordsburg district: Huntington, M. G.

- Economic Geology (continued)**
- Aztec mine, Baldy district: Chase; Lee, 23.
 - Azure turquoise mine, Grant County: Dinsmore, 3.
 - Baldy mining district, Colfax County: Chase, C. A., 1; Lee, 23.
 - Barite: Clippinger, 5.
 - Bauxite: Blake, 6.
 - Bayard area, Grant County: Duriez; Lasky, 6.
 - Beryllium: Jahns, 2, 5; MacFarlane, A.; Storms, 2; Strock, L. W., 1, 2; U. S. Bur. Mines, 3.
 - Bibliography:**
 - Through 1930: Wootton, 2.
 - Through 1944: Bates, 4.
 - Bishop Cap fluorspar prospect: Sur, 1.
 - Black Range mining district: Fishback; Wright, J. W.
 - Black Range tin district: Fries, 1, 2; Harrington, E. R., 21; Naething.
 - Bland mining district: *see* Cochiti mining district
 - Boston Hill mining district, Grant County: Entwistle, 1, 2; Umpleby; Wooton.
 - Brass ore in nature: Keyes, 72.
 - Burro Mountain mining district, Grant County: Anon., 10; Bush, 1, 7; Dinsmore, C. A., 3; Lang, S. S.; Paige, 3, 5, 9, 11; Reid, G. D.; Somers, 1, 2; Stauber, 1; Wade, 1; Zalinski, 1, 2.
 - Caballo Mountains, Sierra County: Allen, C. A.; Hess, 1; Keyes, 20; Larsh, 1.
 - Calcite, optical: Anon., 27; Johnson, J. H., 3, 4; Kelley, 1; Van Amringe.
 - Capitan iron deposit, Lincoln County: Kelley, 2; Soule, 4, 8.
 - Carbon dioxide: Germann, 1; Miller, J. C.; Russell, S.; Talmage, 6; Wells, E. H., 10; Wendland.
 - Carthage coal field, Socorro County: Gardner, J. H., 6.
 - Cement Materials: Eckel, E. C.
 - Central mining district, Grant County: Barua; Duriez; Lasky, 1, 2, 12, 14; Mullen; Schmitt, 1, 4, 6.
 - Cerrillos coal field, Santa Fe County: Lee, 20; Stevenson, J. J., 12; Turnbull.
 - Cerrillos mining district, Santa Fe County: Anon., 1; Blake, 3; Har-
 - ington, E. R., 6; Johnson, D. W., 3; Stoll.
 - Chino mine: *see* Santa Rita mine
 - Chupadera Mesa iron deposits: Keyes, 69.
 - Clay: Clippinger, 3; Davis, C. W.; Herrick, C. L., 12; Shaler, 2.
 - Coal: Ashburner; Campbell, 6, 7; Dane, 2; Ellis, 12, 13; Gardner, J. H., 8; Hunt, C. B., 3; Judd, E. K.; Lakes, 2; Parker, E. W.; Read, 6, 7; Ritter; Storrs; Young, W. H.
 - Analyses: Anon., 18; Campbell, 5; Ellis, 13; Fieldner, 1, 2, 3, 4; Lord, N. W.; Pope; Snyder.
 - Anthracite: Griffith; Lakes, 1; Raymond, 6.
 - Bibliography:** Bates, 3.
 - Carbon-ratios: Storms.
 - Carthage field: Gardner, J. H., 6.
 - Cerrillos field: Lakes, 1; Lee, 20; Stevenson, J. J., 12; Turnbull.
 - Cretaceous: Leconte, 2.
 - Dawson mine: Sheridan, J. E.
 - Durango-Gallup field: Schrader, 1; Shaler, 3.
 - Durango-Monero field: Gardner, J. H., 3.
 - Engle field: Lee, 4.
 - Fort Stanton Reservation: Campbell, 3.
 - Gallina-Raton Spring field: Gardner, J. H., 2.
 - Gallup Basin fields: Kirk, C. T., 1.
 - Gallup-San Mateo field: Gardner, J. H., 4.
 - Hagan field: Keyes, 10.
 - Jemez field: Reagan, 1, 3.
 - Lignite: Lesquereux, 6.
 - Lincoln County: Campbell, 3.
 - Mescal Canyon field: Keyes, 36.
 - North-central New Mexico: Lee, 17.
 - Northeastern New Mexico: Van Diest, 2.
 - Northern New Mexico: Judd, E. W.
 - Omara and Pecos River fields: Gardner, J. H., 5.
 - Raton field: Judd, E. K.; Lee, 33; Stevenson, J. J., 8.
 - Resources: Averitt: Read, 6, 7.
 - Sandoval County: Campbell, 2.
 - San Juan Basin: Sears, J. D., 1, 2.
 - San Juan County: Bauer, 2.
 - San Mateo-Cuba field: Gardner, J. H., 7.

- San Miguel County: Gardner, J. H., 5, 8.
- Santa Fe County: Gardner, J. H., 5.
- Sierra Blanca fields: Wegemann.
- Tijeras field: Lee, 16.
- Una del Gato field: Campbell, 2.
- White Mountains region: Fisher, 1.
- Cobalt: Leach, A. A., 1.
- Cochiti mining district, Sandoval County: Barbour; Harrington, E. R., 12; Herrington; Jenks, 3; Kutenovsky, 9; Statz, 6; Wynkoop.
- Colorado Plateau ores: Butler, B. S., 1.
- Contact manganese mine, Grant County: Russell, P. L., 1.
- Contact metamorphic deposits: *see* Pyrometasomatic deposits
- Cooks Peak mining district, Luna County: Soule, 2.
- Cooney mining district, Catron County: *see* Mogollon mining district
- Copper: Argall; Austin, 2; Ball, S. H.; Cazin, 1, 2; Fischer, 1; Fulton, C. H.; Hart; Jenks, 1, 2; Koschmann, 3; Lasky, 4; Lindgren, 1, 6; Paige, 11; Stauber, 2; Tovote, 1; U. S. Bur. Mines, 5; Wade, 3; Weed, 1, 2; Wendt; Winchell; Wright, J. W.
- Apache district: Wade, 3.
- Bent: Ball, S. H.
- Black Range district: Wright, J. W.
- Burro Mountain district: Bush, 1, 7; Lang, S. S.; Paige, 3, 9; Reid, G. D.; Somers, 1, 2; Stauber, 1; Wade, 1.
- Caballo Mountains: Herrick, C. L., 6.
- Cooney district: Graham.
- Copper King mine: Holmquist, 4.
- Deming quadrangle: Darton, 17.
- Grant County: Snow, 2.
- Hansonburg district: Peters, E. D.; Turner, H. W., 1.
- Hell Canyon district: Statz, 5.
- Lordsburg district: Jones, F. A., 4; Lasky, 4; Huntington, M. G.
- Magdalena district: Argall; Haddon.
- Mora County: Austin, 1.
- Organ district: Soule, 10.
- Pinos Altos district: Paige, 2.
- San Andres Mountains: Herrick, C. L., 6.
- San Pedro district: Berryman; Brinsmade, 3; Henrich, 1.
- Santa Rita mine: Bagg, 1; Ballmer, 2; Graf; Harrington, E. R., 19; Kerr, P. F.; Knox, M. S.; Paige, 6, 10, 11; Ransome; Rickard, 1; Spencer.
- Silver City area: Brinsmade, 4.
- Stauber mine: Holmquist, 2.
- Zuni Mountains: Schrader, 2.
- Copper King mine, Taos County: Holmquist, 4.
- Crossroads oil field, Lea County: Barnes, K. B.
- Dawson coal field, Colfax County: Sheridan, J. E.
- Dayton oil field, Eddy County: Richardson, 4.
- Disseminated copper deposits: Locke.
- Dolomite: Weitz.
- Dolomitic limestone: Bulnes, 2.
- Dona Ana County: Dunham, 1.
- Durango-Gallup coal field: Schrader, 1; Shaler, 3.
- Durango-Monero coal field, Rio Arriba County: Gardner, J. H., 3.
- Elk Mountain mica deposit, San Miguel County: Holmquist, 1; Jahns, 6.
- Ellis manganese deposit, Sierra County: Russell, P. L., 3.
- Engle coal field, Sierra County: Lee, 4.
- Eunice oil field, Lea County: Anderson, C. C.
- Florida Mountains, Luna County: Becker.
- Fluorite: Burchard, 1, 2; Darton, 7; Johnston, W. D.; Rothrock, 2; Russell, P. L., 2, 4; Sheridan, M. J., 2; Soule, 1, 2; U. S. Bur. Mines, 4, 6; Warner.
- Bishop Cap prospect: Sur, 1.
- Huckleberry spar mine: Sur, 2.
- Fluorite Ridge prospects: Russell, P. L., 2.
- Zuni Mountains: Goddard, 1, 2; Kutenovsky, 4.
- Fort Stanton Reservation coal fields, Lincoln County: Campbell, 3.
- Gallinas Mountains mining district, Lincoln and Torrance Counties: Kelley, 4, 6.
- Gallup Basin coal field: Kirk, C. T., 1.
- Gallup-San Mateo coal field: Gardner, J. H., 4.
- Gems: Kay.
- General: Ellis, 7; Emmons, S. F., 1; Frazer; Hayden, 1; Herrick, C. L., 12, 13; Hewett, J. V.; Hill, J. M., 1;

Economic Geology (continued)

- Jones, F. A., 1, 15; Keyes, 75;
 Lasky, 2, 3, 8, 10; Lindgren, 1, 6;
 Loew, 1, 2; Needham, 11; Owen,
 R. E.; Ransome; Schmitt, 2, 3, 6;
 Schrader, 3; Talmage, 5; Tovote,
 2; Wells, E. H., 3, 5.
- Globe pegmatite: Wright, L. A.
- Gold: Fulton, C. H.; Jones, F. A., 2, 3,
 6, 7, 9, 13; Lindgren, 6; Metzger;
 Wells, E. H., 7.
- Aztec mine: Chase, C. A.; Lee, 23.
- Black Range district: Fishback;
 Wright, J. W.
- Cochiti district: Barbour; Harring-
 ton, E. R., 12.
- Cooney district: Graham.
- Grant County: Pickard.
- Lordsburg district: Jones, F. A.,
 4.
- Pinos Altos district: Bush, 2; Paige,
 2; Wright, I. L., 1.
- Placers: Carruth; Heikes; Keyes, 4;
 Leatherbee, 3; Silliman, 1; Statz, 4;
 Stone, G. H., 2.
- San Pedro Mountains: Brinsmade,
 3; Statz, 2.
- Santa Fe County: Jones, F. A., 3;
 Statz, 4.
- Santa Fe region: Blake, 4.
- Sierra del Oro: Keyes, 66.
- Silver City: Brinsmade, 4.
- Sylvanite: Dinsmore, 1; Jones, F. A.,
 6, 7; Martin.
- Taos County: Silliman, 1.
- Graphite: Lakes, 4; Lee, 13, 19.
- Ground Hog mine, Grant County:
 Barua; Lasky, 1, 12.
- Guano: Brady, F. W., 1.
- Gypsum: Brady, F. W., 2; Darton, 21;
 Herrick, H. N.; Meinzer, 3; Shaler,
 1; Stone, R. W., 1, 2.
- Hagan coal field, Sandoval County:
 Keyes, 10.
- Halite: Mansfield, 7.
- Hanover-Fierro mining district, Grant
 County: Birkinbine; Cady; Lan-
 don; Paige, 1, 10; Ransome; Ros-
 sin; Schmitt, 5; Schwartz.
- Hansonburg mining district, Socorro
 County: Peters, E. D.; Turner, H.
 W., 1.
- Harding pegmatite mine, Taos Coun-
 ty: Berliner, 2; Hirschi, 1, 2; Jahns,
 3; Montgomery, A.; Roos; Soule, 3;
 Stevens; Wells, R. C., 3.
- Headstone mining district: Benjovsky,
 2.
- Helvite-beryllium deposit: *see* Iron
 Mountain mining district
- Hematite: Foshag, 1.
- Huckleberry spar mine, Catron Coun-
 ty: Sur, 2.
- Hobbs oil field, Lea County: Carpen-
 ter, C. B.; DeFord, 1; Dinsmore, 4;
 Winchester, 4; Zavoico.
- Hydrothermal alteration: Kerr, P. F.;
 Patterson.
- Hell Canyon mining district, Berna-
 lillo County: Statz, 5.
- Iron: Birkinbine; Grantham; Henrich,
 3; Kelley, 8; Sheridan, M. J., 1.
- Capitan deposit: Kelley, 2; Soule, 4,
 8.
- Chupadera Mesa: Keyes, 9, 69, 101.
- Hanover-Fierro district: Birkinbine;
 Paige, 1.
- Iron Mountain, district: Smythe, 2,
 3.
- Jones mines: Emmens.
- Manganiferous: Entwistle, 1, 2;
 Soule, 6; Umpleby; Wootton.
- Oolitic ore: Kelley, 9.
- Iron Mountain mining district, Sierra
 and Socorro Counties: Jahns, 2, 4,
 5; MacFarlane, A.; Smythe, 3;
 Storms, 1, 2; Strock, 1, 2; U. S. Bur.
 Mines, 3.
- Jemez coal field, Sandoval County:
 Reagen, 1, 3.
- Kaolin: Richard, L. M.
- Kelly mining camp, Socorro County:
 Brinsmade, 2; Herrick, C. L., 2;
 Johnson, W. M.
- Lake Valley mining district, Sierra
 County: Apell; Clark, E.; Cope,
 26; Harrington, E. R., 15;
 Keyes, 38; MacDonald, B.; Silli-
 man, 5.
- Las Vegas area, San Miguel County:
 Bush, 8; Northrop, 13.
- La Ventana-Chacra Mesa coal field,
 Sandoval County: Dane, 2.
- Lead: Fulton, C. H.; McKnight; Soule,
 5.
- Caballo Mountains: Herrick, C. L.,
 6.
- Central mining district: Lasky, 14.
- Grant County: Larsh, 3.
- Houston-Thomas prospect: Rom-
 berg.
- Kelly mine: Johnson, W. M.

- Lordsburg district: Fry; Jones, F. A., 4.
 Magdalena district: Argall; Haddon; Herrick, C. L., 2; Tuttle.
 Pecos mine: Krieger, 1.
 Pinos Altos district: Soule, 7.
 Royal John deposits: Soule, 9.
 San Andres Mountains: Herrick, C. L., 6.
 San Pedro Mountains: Brinsmade, 3.
 Silver City area: Brinsmade, 4.
 Steeple Rock district: Russell, P. L., 6.
 Tres Hermanas district: Lindgren, 5.
 Lithium: Chambers; Jahns, 3; Roos; Santmyers, 2; Soule, 3; Stevens.
 Little Florida Mountains mining district, Luna County: Evans; Lasky, 11.
 Little Hatchet Mountains area: Lasky, 13.
 Lightweight aggregates: Ingram; Clipper, 1, 2.
 Lignite: Lesqueux, 6.
 Lordsburg mining district, Hidalgo County: Fry; Huntington, M. G.; Jones, F. A., 4; Wells, J. L.
 Magdalena mining district, Socorro County: Argall; Brinsmade, 2; Dabney, 1, 2, 3, 4; Gordon, C. H., 5; Haddon; Herrick, C. L., 2; Keyes, 3, 11, 19; Loughlin; Statz, 1, 7; Tuttle.
 Magnesite: Taft.
 Manganese: Allen, K.; Anon., 19; Furness; Harder, 1, 2; Hewett, D. F.; Jones, E. L.; Lasky, 11; Russell, P. L., 1, 3, 5; Wells, E. H., 1.
 Bibliography: Healey.
 Lake Valley district: Apell; Harrington, E. R., 15.
 Little Florida Mountains: Evans.
 Niggerhead deposit: Russell, P. L., 7.
 Manganiiferous iron ore deposits: Entwistle, 1, 2; Soule, 6; Umpleby; Wootton.
 Marble: Merrill, 2.
 Meerschaum: Bush, 6; Michel.
 Mescal Canyon coal field: Keyes, 36.
 Mica: Anon., 17; Holmes; Holmquist, 3; Sterrett, 6, 7.
 Apache mine: Holmquist, 3.
 Elk Mountain: Holmquist, 1; Jahns, 6.
 Petaca district: Jahns, 6.
 Mining districts, map: Northrop, 11.
- Mogollon mining district, Catron County: Andersen, 1; Bush, 3; Ferguson, 1, 2; Graham; Henrich, 2; Kidder; Spillsbury; Weatherby.
 Mogollon Range: Andersen, 2; Weatherby.
 Molybdenum: Bush, 8; Horton; Petar; Vanderwilt, 1, 4.
 Bent: Ball, S. H.
 Questa molybdenum mine: Butler, B. S., 2; Larsen, E. S., 1; Schilling; Vanderwilt, 1, 2, 3, 4.
 Romero mine: Bush, 8.
 Monument oil field, Lea County: Anderson, W. D.
 Morgan manganese mine: Russell, P. L., 5.
 Natural gas: Cole; Rettger, 2, 3.
 Fields: Bybee, 2, 3, 4; Krampert; Rettger, 2, 3; Winchester, 5, 6.
See also Oil and gas fields.
 Unusual: Lang, W. T. B., 1.
 Niggerhead manganese deposit, Socorro County: Russell, P. L., 7.
 Nitrate: Gale.
 Nitrogen gas: Lang, W. T. B., 1, 13.
 Nonmetallics: Talmage, 5.
 Northeastern New Mexico: Harley, 2; Sternberg.
 Northern New Mexico: Stevenson, J. J., 5.
 Oil: Bentz; Bybee, 2, 3, 4; Cole; DeFord, 3; Krampert; Owen, E. W.; Rettger, 2, 3; Winchester, 5, 6.
 Gravities: Bartram.
 Limestone reservoirs: Adams, J. E., 3.
 Limestone vs. sandstone as reservoir rocks: Bulnes, 1.
 Open reservoirs: Adams, J. E., 4.
 Pre-San Andres horizons: King, R. E., 3.
 Woodford black shale: Ellison.
 Oil and gas fields:
 Artesia: Davis, M. J., 1; Rich, A.
 Caprock: Lamb, N. R., 3.
 Crossroads: Barnes, K. B.
 Dayton: Richardson, 4.
 Eunice: Anderson, C. C.
 Hobbs: Carpenter, C. B.; DeFord, 1; Dinsmore, 4; Winchester, 4; Zavoco.
 Monument: Anderson, W. D.
 Pecos Valley: Dinsmore, 4.
 Permian Basin: Adams, J. E., 4; King, H. H., 1, 2, 3, 4.

Economic Geology (continued)

- Salt Lake: Miller, C. P.
- San Juan Basin: Barnes, F. C., 1, 5; Bates, 11; Colton; Krampert; Kerr, J. L.; Silver, 3.
- Shiprock area: Nowels.
- Oil and gas traps: Bartley, 2.
- O'Mara coal field: Keyes, 73.
- Organ mining district, Dona Ana County: Bond; Dunham, 1, 2; Soule, 10; Welsh.
- Oro Grande mine, Grant County: Pickard.
- Orogrande, Otero County: Leech.
- Ortiz mine, Santa Fe County: Harrington, E. R., 7.
- Pecos mine, San Miguel County: Krieger, 1; Stott.
- Pecos Valley oil fields: Dinsmore, 4.
- Peerless lead-zinc mine, Grant County: Soule, 5.
- Pegmatites: Hess, 4, 6, 7; Jahns, 3, 6, 7, 9; Just, 2; Kelley, 5; Landes, 1, 2; Page, 2; Soule, 3; Wright, L. A.
- Perlite: Wood, J. A., 2, 3, 4.
- Permian Basin oil fields: Adams, J. E., 4; King, H. H., 1, 2, 3, 4.
- Petaca mining district, Rio Arriba County: Jahns, 6.
- Petroleum: *see* Oil
- Pewabic mine, Grant County: Schmitt, 5.
- Pigments, iron oxide: Wilson, H.
- Pinos Altos mining district, Grant County: Blood; Bush, 2; Gibson, T. L.; Paige, 2; Soule, 7; Wade, 4; Wright, I. L., 1.
- Placer deposits: Carruth; Pardee. Apache Canyon: Keyes, 4.
- Dry: Heikes; Stone, G. H., 2.
- Mesa del Oro: Leatherbee, 3.
- Santa Fe County: Jones, F. A., 3; Statz, 4.
- Upper Rio Grande: Silliman, 1.
- Potash: Ageton, 2; Anon., 25; Conley; Delacote; Hance; Harley, 6; Hoots; Kroenlein; Mansfield, 3, 4, 5, 6; Smith, H. I., 1, 2; Storms, 3, 4.
- Pumice: Clippinger, 2; Counts; Kutnewsky, 2.
- Pyrometasomatic deposits: Cady; Hess, 3; Jahns, 2; Keyes, 45; Knopf, 1, 2; Landon, 1; Lasky, 5; Rossin; Smythe, 2.
- Questa molybdenum mine, Taos County: Butler, B. S., 2; Larsen, E. S., 1; Schilling; Sundberg; Vanderwilt, 2, 3.
- Raton coal field, Colfax County: Judd, E. K.; Lee, 33; Stevenson, J. J., 8.
- Rattlesnake oil field, San Juan County: Hinson, 1.
- Redbed deposits: Bains; Ball, S. H.; Emmons, S. F., 4; Finch, 1, 2; Fischer, 1; Rogers, 1; Turner, H. W., 2.
- Red River mining district, Taos County: Bush, 4; Fain; Kelly, R. P.; Knaus, 2; Park, 1, 2; Reed, E. F.; Sidwell, 4.
- Rio Grande Valley: Gordon, C. H., 2.
- Rocky Mountain area: Uren.
- Rosedale mining district, Socorro County: Anon., 9; Statz, 3.
- Salt: Ageton, 2; Darton, 3, 4, 23; Gibbs; Herrick, C. L., 12; Hoots; Kroenlein; Phalen, 1, 2.
- Salt Lake oil field, Lea County: Miller, C. P.
- San Juan Basin oil and gas fields: Barnes, F. C., 1, 5; Bates, 11; Colton; Kerr, J. L.; Silver, 3.
- San Juan County coal fields: Bauer, 2.
- San Mateo-Cuba coal field, Sandoval County: Gardner, J. H., 7.
- San Pedro mining district, Santa Fe County: Berryman; Brinsmade, 3; Henrich, 1; Herrick, C. L., 5; McCaffery; Statz, 2.
- Santa Fe region: Blake, 4.
- Santa Rita (Chino) mine, Grant County: Bagg, 1; Ballmer, 2; Graf; Kerr, P. F.; Knox, M. S.; Paige, 6, 10, 11; Ransome; Rickard, 1; Spencer; Wright, R. J., 1, 2.
- Sapello mining district, Grant County: Malmberg.
- Secondary enrichment: Bagg, 1; Emmons, W. H.; Lasky, 7.
- Sedimentary deposits: Ball, S. H.; Fischer, 1, 2; Jenks, 2; Stauber, 2.
- Shiprock area, oil: Nowels.
- Sierra Blanca coal field, Otero County: Wegemann.
- Sierra Cuchillo, Sierra County: Jahns, 1.
- Sierra County: Harley, 1; Leatherbee, 1.
- Sierra del Oro, Santa Fe County: Keyes, 62.
- Silver: Clark, E.; Fischer, 1; Fulton, C. H.; Jones, F. A., 2; Leach, A. A.,

- 1; Lindgren, 1, 6; McKnight; Winchell.
- Black Range district: Fishback; Wright, J. W.
- Bullard's Peak: Krieger, 2.
- Cochiti district: Barbour.
- Lake Valley district: Clark, E.; Cope, 26; Keyes, 38; MacDonald.
- Lordsburg district: Jones, F. A., 4.
- Magdalena district: Tuttle.
- Pinos Altos district: Blood; Paige, 2.
- Rio Grande Valley: Gordon, C. H., 2.
- San Pedro Mountains: Brinsmade, 3.
- Silver City area, Grant County: Brinsmade, 4; Entwistle, 2; Furman; Hernon; Paige, 7; Umpleby; West Texas Geol. Soc., 5; Wuestner.
- Silver Spot deposit, Grant County: Soule, 6.
- Socorro County: Lasky, 2.
- Sodium sulfate: Lang, W. T. B., 9; Wells, R. C., 1.
- Southern New Mexico: Endlich; Silliman, 4.
- Stauber copper mine, Guadalupe County: Holmquist, 2.
- Steeple Rock mining district, Grant County: Russell, P. L., 6.
- Stone: Burchard, 3.
- Structural Relations: Billingsley; Newhouse, 1, 2.
- Sulfur, Jemez Mountains: Mansfield, 1, 2.
- Sylvanite, Hidalgo County: Dinsmore, C. A., 1; Jones, F. A., 6, 7, 9; Martin.
- Talc: Woods, B., 1.
- Tantalum: Berliner, 2; Jahns, 3; Montgomery.
- Taylor Creek tin deposits, Sierra and Socorro Counties: Hill, J. M., 2.
- Tellurium: Ballmer, 1.
- Tijeras coal field, Bernalillo County: Lee, 16.
- Tin: Fries, 1; Harrington, E. R., 20, 21; Hill, J. M., 2; Naething; Volin.
- Trace-element studies, Santa Rita: Graf.
- Tres Hermanas mining district, Luna County: Lindgren, 5; Wade, 2.
- Tripoli: Herrick, C. L., 1.
- Tungsten: Hess, 2, 3; Storms, 1.
- Turquoise: Cowan; Fenderson; Jones, F. A., 10, 14; Kunz, 6; Lakes, 3; Silliman, 2, 3; Sterrett, 3, 4, 5.
- Azure turquoise mine: Dinsmore, 3.
- Burro Mountains: Anon., 3, 10; Dinsmore, 3; Paige, 5; Zalinski, 1, 2.
- Cerrillos Hills: Anon., 1; Harrington, E. R., 6; Johnson, D. W., 3.
- Twining mining district, Taos County: Park, 2.
- Tyrone mining district: *see* Burro Mountains mining district
- Uranium: Anon., 21; Coffin, 1; Fischer, 1, 2; Leach, A. A., 2.
- In pegmatites: Page, 2.
- White Signal district: Leach, F. I., 1.
- Vanadium: Carrera; Coffin, 1; Edwards; Fischer, 1, 2; Johnson, E. D.; Larsh, 2; Leatherbee, 2.
- Caballo Mountains: Allen, C. A.; Clifford, 1; Hess, 1; Larsh, 1.
- Grant County: Larsh, 3.
- Sierra County: Keyes, 76; Leatherbee, 1.
- White Oaks district: Smith, E. P.
- Vein, recent, Ojo Caliente: Lindgren, 3.
- Virginia mining district, Hidalgo County: Lasky, 5, 7.
- White Eagle fluorspar mine: Soule, 2.
- White Oaks mining district, Lincoln County: Smith, E. P.
- White Signal mining district, Grant County: Anon., 21; Leach, F. L.
- Zinc: Demaret, Hutt; Kutnewsky, 3; Lindgren, 6; McKnight.
- Carbonate ores: Keyes, 19.
- Central district: Lasky, 14; Mullen.
- Kelly camp: Brinsmade, 2; Johnson, W. M.
- Magdalena district: Argall; Haddon; Tuttle.
- Pecos mines: Krieger, 1.
- Pinos Altos district: Paige, 2; Soule, 7.
- Silver City area: Brinsmade, 4.
- Southwestern New Mexico: Blake, 7; Hutt.
- Steeple Rock district: Russell, P. L., 6.
- Tres Hermanas district: Lindgren, 5; Wade, 2.
- Zoned deposits: Adams, F. C.
- Zuni Mountains mining district, McKinley and Valencia Counties: Goddard, 1, 2; Kutnewsky, 4; Schrader, 2.

Geologic Maps

See "Geologic map index of New Mexico" by Leona Boardman and Annabel Brown, U. S. Geol. Survey, Index to geologic mapping in the United States, 1950, for actual areas covered by a given map.

- Aztec mine: Lee, 23.
- Bernalillo County: Bryan, K., 1; Ellis, 2; Herrick, C. L., 10; Kelley, 3; Reagan, 1; Reiche, 6.
- Black Range: Fries, 1.
- Boston Hill district: Joesting.
- Burro Mountains: Paige, 3, 9.
- Carthage coal field: Gardner, J. H., 6.
- Catron County: Darton, 3; Ferguson, 1, 2; Fries, 1.
- Cenozoic, Llano Estacado and Rio Grande Valley: West Texas Geol. Soc., 4.
- Central district: Lasky, 6, 12, 14; Schmitt, 1, 5, 6.
- Cerrillos coal field: Lee, 20.
- Cerrillos district: Stoll.
- Chaco River Valley: Bauer, 1.
- Chaves County: Fisher, 2; Nye, 3.
- Chupadera Mesa: Wilpolt.
- Cimarron Range: Smith, J. F., 3.
- Colfax County: Griggs; Lee, W. T., 17, 23, 25, 31, 33; Smith, J. F., 3.
- Cretaceous: Reeside, 5.
- Dona Ana County: Dunham, 1, 2; Reiche, 3.
- Eddy County: Lang, W. T. B., 6.
- Espanola Valley: Denny, 3.
- Estancia Valley: Meinzer, 2.
- Gallinas district: Kelley, 6.
- Gallinas Mountains: Kelley, 4.
- Gila River: Hayes.
- Globe pegmatite: Wright, L. A.
- Grant County: Entwistle, 1, 2; Hayes; Hill, J. M., 2; Joesting; Kelley, 5; Kerr, P. F.; Lasky, 6, 12, 13; Paige, 1, 2, 3, 6, 7, 9; Schmitt, 1, 5; Spencer.
- Ground Hog mine: Lasky, 12.
- Guadalupe County: Gorman.
- Hanover-Fierro district: Paige, 1.
- Harding County: Harley, 2.
- Harding mine: Montgomery.
- Hidalgo County: Lasky, 8, 10, 13; Schwennesen, 1.
- Index to maps of New Mexico through 1950: Boardman.
- Iron deposits: Kelley, 8.
- Iron Mountain district: Jahns, 4, 5.
- Joyita Hills: Wilpolt.
- Jornada del Muerto: Keyes, 22.
- Kilbourne Hole: Reiche, 3; West Texas Geol. Soc., 3.
- Lake Valley district: Clark, E.
- Las Vegas Basin: Northrop, 13.
- Lea County: Nye, 4.
- Lincoln County: Campbell, 3; Just, 1; Kelley, 4; Meinzer, 3; Wegemann.
- Little Florida Mountains: Lasky, 11.
- Little Hatchet Mountains: Lasky, 13.
- Llano Estacado: Cummins, 1; West Texas Geol. Soc., 4.
- Lordsburg district: Lasky, 8.
- Los Pinos Mountains: Stark, 3; Wilpolt.
- Lucero Mesa: Kelley, 3.
- Luna County: Darton, 14, 17; Lasky, 11.
- Magdalena district: Loughlin.
- Manzano Mountains: Reiche, 6.
- McKinley County: Gardner, J. H., 7; Kirk, C. T., 1; Shaler, 3.
- Mogollon district: Ferguson, 1, 2.
- Mora County: Harley, 2; Northrop, 13.
- Mount Taylor area: Hunt, C. B., 4.
- Nacimiento Mountains: Northrop, 14.
- New Mexico: Darton, 31; Ellis, 5.
- Northeastern New Mexico: Collins, R. F., 2; Maher; Read, 3.
- Northern New Mexico: Hayden, 4.
- Ogallala formation: Bretz, 3.
- Organ Mountains: Dunham, 1.
- Otero County: Keyes, 100; Meinzer, 3; Wegemann.
- Paleocene: Brown, R. W., 3.
- Pewabic mine: Schmitt, 5.
- Pecos mine: Krieger, 1; Stott.
- Pecos Valley: Lang, W. T. B., 6.
- Pinos Altos district: Paige, 2; Soule, 7.
- Quay County: Dobrovolsky, 1.
- Questa molybdenum mine: Vanderwilt, 2.
- Raton coal field: Lee, 33.
- Raton Mesa: Lee, 25.
- Red River district: Park, 1.
- Rio Arriba County: Atwood, W. W., 2; Dane, 4; Denny, 3; Just, 2; Northrop, 14; Smith, H. T. U., 5; Wright, L. A.
- Rio Grande Valley: Bryan, K., 26; Lee, 6; West Texas Geol. Soc., 4.
- Rio Puerco Valley: Bryan, K., 23; Wright, H. E., 2, 3.
- Royal John lead-zinc deposit: Soule, 9.

- Sacramento Mountains: West Texas Geol. Soc., 6.
- Sandia Mountains: Ellis, 2.
- Sandoval County: Northrop, 14; Reagan, 1; Renick, 4.
- Sangre de Cristo Mountains: Cabot; Gruner, 1; Northrop, 13; Park, 2; Ray, L. L., 2; Smith, J. F., 3.
- San Juan Basin: Bauer, 1, 2; Colbert, 3; Dane, 2, 4; Darton, 5; Gardner, J. H., 3, 7; Gregory, 1, 2; Kirk, C. T., 1; Pike, 3; Reeside, 2; Sears, J. D., 1, 2; Shaler, 3; Silver, 2; Williams, H.
- San Juan County: Bauer, 2; Gardner, J. H., 3; Shaler, 3.
- San Juan Mountains: Atwood, W. W., 2.
- San Luis Valley: Schwennesen, 1.
- San Miguel County: Krieger, 1; Northrop, 13; Read, 1; Stott.
- San Pedro district: Herrick, C. L., 5.
- San Pedro Mountains: Northrop, 14.
- Santa Fe County: Cabot; Lee, 20; Johnson, D. W., 3; Read, 2; Reagan, 1; Stearns, C. E., 2; Stoll.
- Santa Rita mine: Ballmer, 2; Kerr, P. F.; Paige, 6; Spencer.
- Sierra Blanca coal field: Wegemann.
- Sierra County: Fries, 1; Harley, 1; Jahns, 4, 5; Rothrock, 1.
- Silver City area: West Texas Geol. Soc., 5.
- Socorro County: Denny, 2; Gardner, J. H., 6; Herrick, C. L., 9; Kelley, 3; Keyes, 22; Lasky, 2; Loughlin; Stark, 3; Wells, E. H., 2; Wilpolt; Winchester, 2; Wright, H. E., 1.
- Southeastern New Mexico: Hoots.
- Southwestern New Mexico: Lasky, 9.
- Taos County: Cabot; Gruner, 1; Just, 2; Montgomery; Park, 1, 2; Upson; Vanderwilt, 1.
- Torrance County: Bates, 9; Meinzer, 2; Wilpolt.
- Tularosa Basin: Meinzer, 3.
- Union County: Harley, 2.
- Valencia County: Bryan, K., 25; Herrick, C. L., 9; Hunt, C. B., 4; Johnson, D. W., 2; Kelley, 3; Reiche, 6; Wells, E. H., 2; Wilpolt; Wright, H. E., 2.
- West-central New Mexico: Dutton, 2.
- White Sands: Keyes, 100.
- Zuni Salt Lake: Darton, 3.
- Geophysics**
- Aeromagnetic maps:
- De Baca County: Dempsey, 1, 2.
 - Guadalupe County: Dempsey, 1, 2, 3, 4.
 - San Miguel County: Dempsey, 3, 4.
- Atom bomb test, reflection and refraction records: Gutenberg; Leet.
- Boston Hill, iron deposits: Joesting.
- Copper Flat:
- Magnetic survey: Bacon.
 - Resistivity survey: Bacon.
- De Baca County, aeromagnetic map: Dempsey, 1, 2.
- Exploration, oil and gas, Permian Basin: Williams, N.
- Geothermal gradients from wells: Lane, A. C.; Lang, W. T. B., 2, 3, 7.
- Gravity prospecting: Barnes, V. E.
- Lead and zinc: Romberg.
- Guadalupe County, aeromagnetic map: Dempsey, 1, 2, 3, 4.
- Hobbs oil field: Coffin, 4.
- Iron deposits, Boston Hill: Joesting.
- Magnetic survey, Copper Flat: Bacon.
- Monument oil field, resistivity survey: England.
- Oil and gas exploration: Coffin, 4; Dempsey, 1, 2, 3, 4; Dobyns; Williams, N.
- Ore discovery, gravity meter survey: Romberg.
- Permian Basin, oil and gas exploration: Williams, N.
- Potash, resistivity prospecting: Spicer, 1.
- Questa molybdenum mine, resistivity prospecting: Sundberg.
- Radioactivity logging, oil wells: Ingalls.
- Resistivity logging, wells: Ingalls.
- Resistivity prospecting:
- Copper Flat: Bacon.
 - Monument oil field: England.
 - Potash: Spicer, 1.
 - Questa molybdenum mine: Sundberg.
- San Juan Basin, oil and gas exploration: Dobyns.
- San Miguel County, aeromagnetic map: Dempsey, 3, 4.
- Seismic information, atomic bomb test: Gutenberg; Leet.
- Seismic maps, velocity data: Dahm.

Geophysics (continued)

Seismology: Bagg, 2; Northrop, 10, 15;
Reid, H. F.

Historical Geology

- Abiquiu quadrangle: Smith, H. T. U., 1, 4, 6.
- Abo formation: Böse; Romer, 5.
- Afton craters, Dona Ana County: Lee, 8.
- Alamita coal measures: Keyes, 83.
- Alamosa Creek Valley, Socorro County: Winchester, 2.
- Albuquerque region: Herrick, C. L., 3, 5, 10.
- Algae reefs, Ogallala formation: Price, W. A., 3.
- Ancestral Rocky Mountains: Heaton, 1; Melton, 1; Schuchert, 3.
- Animas sandstone: Keyes, 97.
- Atwood copper group: Huntington, M. G.
- Barberian series: Keyes, 129.
- Basalt flows, age: Keyes, 90.
- Basaltic sediments: Sidwell, 8.
- Bayard area: Lasky, 6.
- Beartooth sandstone: Keyes, 123.
- Berenda limestone: Keyes, 114.
- Bernalilloan redbeds: Keyes, 112.
- Bernalillo County: Bryan, K., 1.
- Bernalillo shales: Keyes, 103.
- Bibliography:
 - Through 1930: Wootton, 2.
 - Through 1944: Bates, 4.
- Bioherms, Sacramento Mountains: Bowsher.
- Black Range: Fries, 1; Gordon, C. H., 5.
- Black River Valley: Lang, W. T. B., 17.
- Blaine formation: Clifton, 1.
- Buried mountains, Permian: Rich, J. L., 4.
- Burlington limestone: Springer, F., 1.
- Burro Mountains: Somers, 1.
- Caballo Mountains: Herrick, C. L., 6; Keyes, 14.
- Caballo novaculite: Baker, C. L., 7.
- Cabezon Peak area: Freeman, J. C.
- Cambrian, correlation: Walcott.
- Cambro-Ordovician: Wheeler, R. R., 1.
- Capitan limestone: Keyes, 106; Lloyd, E. R., 1.
- Capitan reef: Adams, J. E., 7; Link, 1, 2; Twenhofel, W. H.
- Carboniferous: Gordon, C. H., 2; Keyes, 24, 47, 68; King, P. B., 1; Richardson, 3.
- Correlation: Williams, H. S.
- Carlsbad dolomite: Lang, W. T. B., 12. Analyses: Wells, R. C., 3.
- Carthage coal field: Gardner, J. H., 6; Needham, 6.
- Castile formation: Kroenlein; Lang, W. T. B., 21; Udden.
- Ceja del Rio Puerco: Bryan, K., 25.
- Cenozoic:
 - Llano Estacado: West Texas Geol. Soc., 4.
 - Rio Grande Valley: West Texas Geol. Soc., 4.
 - Tusas-Tres Piedras area: Butler, A. P., 1, 2.
- Central district: Schmitt, 4.
- Central New Mexico: Needham, 12.
- Cerrillos coal field: Lee, 20; Stevenson, J. J., 12.
- Cerrillos Hills: Johnson, D. W., 3.
- Cerro Colorado volcano: Wright, H. E., 1.
- Chaco Canyon deposits: Bryan, K., 7.
- Chaco River Valley: Bauer, 1.
- Chacra Mesa-La Ventana coal field: Dane, 2.
- Chaves County: Merritt.
- Chupadera formation: Keyes, 92. Analyses: Wells, R. C., 3.
- Chupadera Mesa: Keyes, 69.
- Cimarron vs. Chaves for redbeds: Keyes, 134.
- Cimarron redbeds: Keyes, 99, 131.
- Cimarron Range: Smith, J. F., 2, 3.
- Cimarron Valley: Parker, B. H., 2.
- Climate, Jurassic-Cretaceous: Leopold.
- Clovis area: Antevs, 1, 6; Stock, 5.
- Coal fields: *see Economic Geology*, coal fields
- Coconino sandstone: Reiche, 2.
- Colfax County: Griggs.
- Colorado geosyncline: Harris, G. W.
- Colorado group: Rankin; Stevenson, J. J., 10.
- Comanche series: Hill, R. T., 9; Stanton, 2.
- Contact manganese mine: Russell, P. L., 1.
- Cornudas Mountains: Clabaugh; Timm; Zapp.
- Correlation, general: Wilmarth, 1, 2.
- Cretaceous: Cope, 14; Hansen; Harris, G. W.; Keyes, 89; Lee, 21; Osborn,

- H. F., 4; Pike, 1, 2; Reeside, 5;
White, C. A., 14, 15.
- Barberian series: Keyes, 129.
- Beartooth sandstone: Keyes, 123.
- Climate: Albritton; Leopold.
- Colorado group: Rankin; Stevenson,
J. J., 10.
- Comanche series: Hill, R. T., 9;
Stanton, 2.
- Correlation: Brown, B., 2; White, C.
A., 18.
- Dakota sandstone: Stanton, 2.
- Dakota series: Keyes, 26.
- Morrison formation: Berry; Darton,
13; Mook, 2; Stanton, 3; Stokes.
- Ojo Alamo beds: Brown, B., 1, 2;
Winchester, 1.
- Revuelto formation: Keyes, 127.
- San Juan Basin: Sears, 3; Umbach,
4; Vann, 1, 2.
- Transgressive and regressive facies:
Pike, 3; Sears, 3.
- Trinity group: Lasky, 9.
- Tucumcarian series: Keyes, 125.
- Cretaceous-Tertiary boundary: Keyes,
133.
- Curry County: Theis, 1.
- Cyclothsems, Pennsylvanian: Young, J.
A., 4.
- Dakotan series: Keyes, 26.
- Dakota sandstone: Stanton, 2.
- Delaware Basin: Adams, J. E., 6; Coon;
Lang, W. T. B., 5.
- Delaware formation: Keyes, 79.
- Deming quadrangle: Darton, 17.
- Devonian: Darton, 29; Marcou, 7; Stevenson,
F. V., 4.
- Correlation: Cooper, G. A.; Williams, H. S.
- Onondagan equivalents: Stevenson,
F. V., 2.
- Ouray limestone: Keyes, 121.
- Percha shale: Keyes, 85, 113.
- Sly Gap formation: Stevenson, F. V.,
1.
- Southeastern New Mexico: Webb.
- Dockum conglomerate: Roth, 2.
- Dog Creek formation: Clifton, 1.
- Eastern New Mexico: Baker, C. L., 2;
Hill, R. T., 4; Lee, 29; Rich, J. L.,
5; Van Diest, 1.
- Eddy County: DeFord, 3; West Texas
Geol. Soc., 1.
- El Paso limestone: Kirk, E.
- Eocene: Granger, 1, 2; Osborn, H. F.,
4; Johannsen; Smith, J. H.
- Animas sandstone: Keyes, 97.
- Correlation: Brown, B., 2; Clark, W.
B.
- Estancia Valley: Keyes, 40.
- Eunice oil field: Anderson, C. C.
- Figueroa Wash: Slossan.
- Florida Mountains: Becker.
- Fluorite deposits: Goddard, 1; Roth-
rock, 1; Soule, 1.
- Folsom, Union County: Bryan, K., 24;
Cook, 1, 2.
- Fusselmann limestone: Keyes, 108.
- Wells, R. C., 3.
- Galisteo formation: Stearns, C. E., 2.
- Gallinas Mountains: Kelley, 4, 6.
- General: Abert; Antisell; Bailey, J. W.;
Blake, 1, 2; Conkling, 1, 2, 3; Cope,
7, 12, 15; Dana; Darton, 12, 31, 33;
Davis, W. M.; Emmons, S. F., 1, 3;
Emory, 1, 2, 3; Gilbert, 1, 2; Gordon,
C. H., 4; Griffin; Hayden, 1, 2,
3, 4; Herrick, C. L., 4, 5, 13; Hill,
R. T., 2, 4; Howell, 1; Jewett;
Johnson, D. W., 5; Jones, F. A., 12;
Keyes, 5, 63, 64, 126; King, P. B.,
2; Knox, J. K., 1; Leconte, 1, 3;
Loew, 1, 3; Long; McFarlane, J.;
Marcou, 1, 2, 3, 4, 5; Newberry, 1,
3, 4; Stevenson, J. J., 1; Wheeler,
G. M., 1, 2, 3, 4, 5, 6, 7, 8, 9, 10,
11; Whipple, Wizlzenus.
- Glaciation: Elis, 8, 11; Ray, L. L., 2;
Siebenthal, 1; Smith, H. T. U., 7;
Stone, G. H., 1, 4.
- Glorieta sandstone: Huntington, G. C.;
Keyes, 91.
- Golden area, Santa Fe County: Erick.
- Gran Quivira quadrangle: Bates, 9.
- Ground Hog mine: Lasky, 1.
- Guadalupe County, asphalt deposits:
Gorman.
- Guadalupe group: Beede, 2, 3; Darton,
26; Keyes, 93.
- Guadalupe Mountains: Keyes, 77; Shumard, B. F., 1.
- Gym limestones: Keyes, 118.
- Headstone district: Benjovsky, 2.
- Hermosa formation: Bradish, 2.
- Hueco vs. Magdalena: Keyes, 85.
- Hobbs and other oil fields: Carpenter,
C. B.
- Jemez-Albuquerque region: Reagan, 1.
- Jemez (Valle) caldera: Ross, 4.
- Jemez coal field: Reagan, 3.
- Jemez Plateau: Kelly, C.

- Historical Geology (continued)**
- Jornada del Muerto: Keyes, 1, 14; Shumard, G. G., 2.
 - Jurassic: Branson, E. B., 1, 3; Broadhead; Heaton, 3; Huene, 1, 3; Hyatt, 2; Keyes, 17, 86; White, C. A., 9.
 - Climate: Leopold.
 - Correlation: Baker, A. A., 2, 3; Schuchert, 2.
 - Overlap: Silver, 1.
 - San Juan Basin: Hoover.
 - Kiamichi formation: Clark, W. T.
 - Kilbourne Hole: Reiche, 3.
 - Ladron Mountains: Noble.
 - Lake Valley district: Cope, 26; Keyes, 38.
 - Lake Valley limestone: Cope, 40; Keyes, 23, 102, 104, 109; Laudon, 1.
 - Lake Valley manganese deposits: Apell.
 - La Plata sandstone: Goldman.
 - Laramie group: Newberry, 8; Stevenson, J. J., 2, 6, 8.
 - Laramie hiatus, Southern Rocky Mountains: Keyes, 74.
 - Las Vegas Basin: Northrop, 13.
 - Las Vegas quadrangle: Swanson; Williamson.
 - Lava fields: Dutton, 1, 3.
 - La Ventana-Chacra Mesa coal field: Dane, 2.
 - Lea County: Nye, 3.
 - Lemitar Volcano: Herrick, C. L., 4.
 - Little Florida Mountains: Lasky, 11.
 - Little Hatchet Mountains: Lasky, 10, 13.
 - Llano Estacado: Baker, C. L., 1.
 - Lordsburg district: Lasky, 8.
 - Los Pinos Mountains: Stark, 1, 3.
 - Loup Fork formation: Cope, 49.
 - Lucero Mesa: Kelley, 3.
 - Luna County: Darton, 14.
 - Madera limestone: Hasson; Johnson, R. B.; Keyes, 120.
 - Magdalena district: Koschmann, 2; Loughlin.
 - Magdalena group: Bisbee, 1, 2; Keyes, 119.
 - Magdalena Mountains: Gordon, C. H., 5; Herrick, C. L., 2, 4; Keyes, 19, 23.
 - Magdalena shales: Keyes, 137.
 - Manzano group: Lee, 12, 28; Keyes, 115, 116.
 - Manzano Mountains: Reiche, 6.
 - Mapping with aerial photos: Loel.
 - Mesaverde formation: Hendricks, 1, 2.
 - Mesaverde group: Keyes, 88.
 - Mesozoic: Dobrovinsky, 1; Heaton, 4; Marcou, 9; Stevenson, J. J., 9; White, C. A., 13.
 - Chama Valley: Colbert, 2.
 - Mica deposits: Jahns, 6.
 - Mimbres limestone: Keyes, 117.
 - Mississippian: Gordon, C. H., 2; Laudon, 3, 4.
 - Bioherms: Bowsher.
 - Burlington limestone: Springer, F., 1.
 - Caballitos novaculite: Baker, C. L., 7.
 - Lake Valley limestone: Cope, 40; Keyes, 23, 102, 104, 109; Laudon, 1.
 - Mogollon district: Ferguson, 1.
 - Mogollon Range: Henrich, 2.
 - Molas formation: Bradish, 2.
 - Monument oil field: Anderson, W. D.; England; Fulton, G. L.
 - Moreno Valley: Ray, L. L., 3; Smith, J. F., 1.
 - Morrison formation: Berry; Darton, 13; Lee, 1, 27; Mook, 2, 3; Stanton, 3; Stokes.
 - Mount Taylor region: Blodgett; Dutton, 2; Hunt, C. B., 1, 2, 4; Shimer, 1.
 - Mud deposits: Cope, 33.
 - Nacimiento series: Gardner, J. H., 9; Keyes, 81.
 - Nacimiento Mountains: Northrop, 14.
 - Navajo coal measures: Keyes, 130.
 - Navajo sandstone: Keyes, 95.
 - Newark system: Russell, I. C.
 - Niggerhead manganese deposit: Russell, P. L., 7.
 - North-central New Mexico: Lee, 17.
 - Northeastern New Mexico: Baldwin; Garrett; Miller, B. F.; St. John.
 - Northern New Mexico: Conkling, 1, 2; Lesquereux, 6; Northrop, 16; Stevenson, J. J., 1, 5, 7.
 - Northwestern New Mexico: Darton, 5.
 - Ochoa series: Adams, J. E., 6; Donegan.
 - Ogallala formation: Bretz, 3; Cox, W. B.; Van Tuyl, 2.
 - Onondagan equivalents: Stevenson, F. V., 2.
 - Ordovician: Keyes, 87.
 - El Paso limestone: Kirk, E.
 - Simpson group: Bartley, 1.
 - Organ Mountains: Dunham, 1; Hunt, W. F., 1.

- Ortiz Mountains: Keyes, 45; Ogilvie, 3.
 Ouray limestone: Keyes, 121.
 Paleocene: Brown, R. W., 3; Granger, 2; Sinclair, 1.
 Paleogeography: Case, 9; McKee; Schuchert, 1.
 Paleozoic: Bass, 2; Gordon, C. H., 1; Heaton, 4; Keyes, 70; Nelson, L. A. Central New Mexico: Lee, 9.
 Correlation: Bass, 1.
 Paleogeography: Case, 9.
 Sedimentary basins: Read, 5.
 Socorro County: Wilpolt.
 Southern New Mexico: Darton, 18, 19.
 Upper: Read, 3.
 Pecos Mine: Stott.
 Pecos Valley: Halibuton; Lang, W. T. B., 18; Roach; Robinson, T. W., 1; Semmes; Sidwell, 3; Theis, C. V., 11.
 Pediments:
 Granite Gap: Bryan, K., 22.
 Magdalena Mountains: Koschmann, 2; Smith, H. T. U., 2.
 Rio Puerco: Bryan, K., 23.
 Santa Fe area: Campbell, 1; Ogilvie, 2.
 Socorro area: Bryan, K., 19.
 Peerless lead-zinc mine: Soule, 5.
 Pegmatites: Hess, 4, 6, 7; Jahns, 3, 6, 7, 9; Just, 2; Kelley, 5; Page, 2.
 Pennsylvanian: Haliburton; Henbest, 2, 3; Hollingsworth; Read, 1, 5; Stevenson, F. V., 3; Thompson, M. L., 1, 2, 3; Young, J. A., 3, 4, 5.
 Abo Canyon: Coleman.
 Correlation: Brill; Moore, R. C., 2, 3; Needham, 7, 10.
 Cycloths: Young, J. A., 4.
 Madera limestone: Hasson: Johnson, R. B.; Keyes, 120.
 Magdalena group: Bisbee, 2; Keyes, 119.
 Rio Grande Valley: Gordon, C. H., 3.
 Sandia formation: Keyes, 82.
 Pennsylvanian-Permian: Butler, R.; Read, 1; Thompson, M. L., 2.
 Percha shale: Keyes, 85, 113.
 Permian: Adams, J. E., 2, 5; Archiac: Baker, C. L., 5; Blanchard; Bybee, 1; Cartwright; Cope, 28; Crandall; Darton, 27; DeFord, 2; Huene, 1; King, P. B., 1, 3, 5; King, R. H., 2; Lewis, 1; Needham, 12, 13; Read, 1; Schneider; Teagle; Thompson, 1. L., 1, 2; Wheeler, R. R., 2; Willis, 3.
 Abo formation: Romer, 5; Bose.
 Capitan limestone: Keyes, 106; Lloyd, E. R., 1.
 Capitan reef: Adams, J. E., 7; Link, 1, 2; Twenhofel, W. H.
 Castile formation: Kroenlein; Lang, W. T. B., 21; Udden.
 Chupadera formation: Keyes, 92; Wells, R. C., 3.
 Cimarron, redbeds: Keyes, 99, 134.
 Correlation: Baker, A. A., 1; Bass, 1; Schuchert, 4; Skinner; Willis, R., 1.
 Delaware formation: Keyes, 79.
 Glorieta sandstone: Keyes, 91.
 Guadalupe Mountains: Shumard, B. F., 1.
 Guadalupe series: Beede, 2, 3; Darton, 26; Keyes, 93.
 Manzano group: Keyes, 115, 116; Lee, 12, 28.
 Ochoa series: Adams, J. E., 6.
 Paleogeography: Hills, J. M., 2.
 Pecos Valley: Adams, J. E., 7; Lang, W. T. B., 6; Wrather.
 Redbeds: Baker, C. L., 6.
 Rustler Springs formation: Udden.
 Salado formation: Lang, W. T. B., 8.
 Salt deposits: Baker, C. L., 6; Darton, 23.
 San Juan Basin: Read, 8.
 Seven Rivers formation: Bates, 1.
 Tansill formation: DeFord, 5.
 West Texas: Adams, J. E., 2; Page, 1.
 Yeso formation: Keyes, 79.
 Permo-Carboniferous, northern New Mexico: Case, 3.
 Pewabic mine area: Schmitt, 5.
 Pleistocene, Portales Valley: Robbins, Sellards.
 Pliocene: Cope, 3.
 Poleo sandstone: Wells, R. C., 3.
 Precambrian: Keyes, 16, 55.
 Correlation: Van Hise.
 Hamilton mine: Lindgren, 2.
 Los Pinos Mountains: Hurst.
 Pedernal Hills: Hurst.
 San Juan Basin: Kelley, 11.
 Prehistoric man: *see Paleontology, Man*
 Pre-Moenkopi unconformity: Dake, 1.
 Pre-Pennsylvanian, northeastern New Mexico: Maher.

- Historical Geology (continued)**
- Pre-San Andres formations: King, R. E., 3.
 - Puerco formation: Cope, 58; Dane, 1; Gardner, J. H., 9; Sinclair, 2.
 - Puertecito area: Wells, E. H., 2.
 - Quaternary:
 - San Acacia area: Denny 4.
 - San Juan Mountains: Atwood, W. W., 2.
 - Tusas-Tres Piedras area: Butler, A. P., 1, 2.
 - Quay County: Dobrovolny, 1.
 - Questa molybdenum mine: Schilling; Vanderwilt, 2.
 - Raton Basin: Kansas Geol. Soc., 1.
 - Raton coal field, unconformity: Lee, 11, 14.
 - Raton Mesa: Knowlton, 3; Lee, 11, 15, 25; Mertie, 1, 2, 3.
 - Rattlesnake oil field: Hinson, 1.
 - Recent deposits: Bryan, K., 7.
 - Redbeds: Case, 3, 6, 7, 8; Darton, 11, 30; Keyes, 105, 111; Lee, 7, 10; Mellon, 2; Reeside, 4.
 - Red River district: Park, 2.
 - Revuelto formation: Keyes, 127.
 - Rio Grande Canyon: Bryan, K., 18.
 - Rio Grande Depression: Bryan, K., 26; Henderson, J.; Keyes, 71; Lee, 6; Needham, 8; Northrop, 4; Simpson, G. G., 9.
 - Carboniferous: Keyes, 68.
 - Mississippian: Gordon, C. H., 2.
 - Rio Penasco basin: Renick, 3.
 - Rio Puerco area: Wright, H. E., 2.
 - Rio Puerco Valley: Wright, H. E., 2, 3.
 - Rocky Mountains: Uren.
 - Roosevelt County: Theis, 1.
 - Roswell area: Fisher, 2.
 - Roswell artesian basin: Fiedler, 1; Morgan, 2.
 - Rustler formation: Donegan; Udden.
 - Sacramento Mountains, Mississippian formations: Laudon, 2, 3.
 - Salado formation: Lang, W. T. B., 8, 11, 20, 21.
 - Saline basins: Johnson, D. W., 1.
 - San Acacia area: Denny, 4.
 - San Andres formation: Keyes, 132; Lewis, 2.
 - San Andres Mountains: Baker, C. L., 8; Herrick, C. L., 6.
 - San Agustin Plains: Powers, 2.
 - Sandia Cave: Bryan, K., 33; Hibben, 3, 4.
 - Sandia formation: Keyes, 82, 128.
 - Sandia Mountains, Ellis, 2; Herrick, C. L., 5.
 - Sand dunes:
 - Gypsum: Potter.
 - Modern sources, Rio Grande Valley: Rittenhouse, 3.
 - Sangre de Cristo formation: Butler, R.; Perusek.
 - Sangre de Cristo Mountains: Conkling, 1; Dana; Gruner, 1; Sidwell, 10.
 - San Jose culture: Bryan, K., 35.
 - San Jose Valley: Nichols, 1; Renick, 2.
 - San Juan Basin: Barb; Bauer, 1; Beaumont, 2; Cross, 5; Dane, 2, 3, 4; Darton, 5, 6; Gregory, 1, 2; Hendricks, 1; Hunt, C. B., 3; Kirk, C. T., 1; Matthew, 9; Reeside, 1, 2.
 - Cretaceous: Dane, 3; Silver, 3; Umbach, 4.
 - Eocene: Simpson, G. G., 8.
 - Jurassic: Hoover.
 - Oil and gas fields: Barnes, F. C., 1, 2, 5; Colton.
 - Paleocene: Sinclair, 1.
 - Paleozoic: Bass, 2.
 - Pennsylvanian: Bradish, 2; Tester.
 - Permian: Read, 8.
 - Precambrian: Kelley, 11.
 - Tertiary: Simpson, G. G., 8.
 - Triassic: Wengerd.
 - San Juan County: Bauer, 1; Knowlton, 5.
 - San Juan Mountains: Atwood, W. W., 2.
 - San Miguel County: Allison.
 - San Pedro district: Berryman; Herrick, C. L., 5.
 - San Pedro Mountains: Northrop, 14.
 - Santa Fe area: Blake, 5; Read, 2.
 - Santa Fe beds: Cope, 4, 10; Denny, 1, 3; Simpson, G. G., 1.
 - Santa Rita area: Bagg, 1; Ballmer, 2; Paige, 6, 11; Rickard, 1; Spencer.
 - Santa Rosa sandstone: Gibson, D. T.; Sidwell, 2.
 - Sediments from alaskite, Capitan Mountains: Sidwell, 7.
 - Seven Rivers formation: Bates, 1.
 - Shandon quartzite: Keyes, 110.
 - Shinarump conglomerate: Keyes, 94.
 - Sierra Blanca coal field: Wegemann.
 - Sierra County: Harley, 1.
 - Sierra Cuchillo, Sierra County: Jahns, R. H., 1.
 - Silurian: Keyes, 135.

- Correlation: Swartz.
 Fusselmann limestone: Keyes, 108;
 Wells, R. C., 3.
 Silver City area: Herno.
 Silver City quadrangle: Paige, 7.
 Simpson group: Bartley, 1.
 Sloan Canyon formation: Stovall, 1.
 Sly Gap formation: Stevenson, F. V., 1.
 Socorro County: Herrick, C. L., 9.
 Socorro Peak: Herrick, C. L., 4.
 Southeastern New Mexico: Hoots;
 Rich, A.; Shumard, G. G., 1.
 Paleozoic oil horizons: Lloyd, E. R.,
 3.
 Southern New Mexico: Darton, 16;
 Endlich.
 Pre-Permian: West Texas Geol. Soc.,
 6.
 Southwestern New Mexico: Webster.
 Tansill formation: DeFord, 5.
 Terraces: Antevs, 4; Keyes, 61.
 Aggrated: Keyes, 34.
 Rio Puerco: Bryan, K., 23.
 Tertiary: Cope, 3, 35; Dall, 2; Keyes,
 35, 96; Matthew, 2; Stanton, 3.
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 Torrejon formation: Dane, 1; Gardner,
 J. H., 9; Sinclair, 2.
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 Dockum conglomerate: Roth, 2.
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 Santa Rosa sandstone: Gibson, D. T.;
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 E., 1; Sidwell, R. G., 5.
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 Valencia County: Herrick, C. L., 9;
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 L., 11; Keyes, 100; Talmage, 1, 2.
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- Agates: Ellermeier; McCann, 2; Neely.
 Jornada del Muerto: Manning.
 Alunite: Hillebrand, 3.
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 C., 3.
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 Bismuth minerals in pegmatites: Hein-
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 3, 4; Kelley, 1; Van Amringe.
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- Caledonite, Las Cruces: Farrington, 1.
- Caliche: Bretz, 4; Wells, R. C., 3.
- Carbonate minerals, differential thermal analysis: Beck, 2; Faust, G. T.
- Carbon dioxide gas: Germann, 1; Miller, J. C.; Russell, S.; Talmage, 6; Wells, E. H., 10; Wendland.
- Carnallite, Eddy County: King, R. H., 1; Wells, R. C., 3.
- Chalmersite, Fierro: Schwartz.
- Clay: Ross.
- Copper King mine: Holmquist, 4.
- Copper ore, Chloride: Baumhauer.
- Descloizite: Hillebrand, 2.
- Differential thermal analysis, carbonate minerals: Beck, 2; Faust, G. T.
- Dolomite crystals: Anon., 26; Rogers, 2.
- Dona Ana County: Genth, 3.
- Elk Mountain mica deposit: Holmquist, 1.
- Ellis manganese deposit: Russell, P. L., 3.
- Endlichite: Bowman.
- Eucolite: Clabaugh, 2.
- Eudialyte: Clabaugh, 2.
- Fluorescent minerals: Hershey.
- Fluorite, Luna County: Twenhofel, W. S.
- Galena, Sierra County: Chisolm.
- Gallinas district: Kelley, 6.
- Gamma-ray studies, potassium salts: Spicer, 2.
- Gems: Kay.
- General: Bailey, J. W.; Brevoort; Lindgren, 6; Loew, 2; Stone, G. H., 3; U. S. Bur. Mines, 1, 2; U. S. Geol. Survey, 1.
- Glass from atomic bomb: Ross, 5; Khan.
- Glauconite, Sandoval County: Wells, R. C., 3.
- Globe pegmatite: Wright, L. A.
- Grant County: Hillebrand, 1.
- Graphite, Colfax County: Lakes, 4; Lee, 13, 19.
- Gypsum: Brady, F. W., 2; Needham, 1; Potter; Stone, R. W., 1, 2.
- Halite: Ageton, 2; Darton, 3, 4.
- Harding, pegmatite mine: Jahns, 3. Lithium minerals: Soule, 3.
- Muscovite, pink, analyses: Wells, R. C., 3.
- Tantalum minerals: Montgomery; Soule, 3.
- Headstone district: Benjovsky, 2.
- Hedenbergite, Hanover: Wells, R. C., 3.
- Helvite:
- Iron Mountain district: Glass, 1, 2; Gruner, 2; Jahns, 2, 5; Strock, 1.
 - Grandview zinc mine: Weissenborn.
- Hematite: Foshag, 1.
- Huckleberry spar mine: Sur, 2.
- Iceland spar: Johnson, J. H., 3, 4; Kelley, 1; Van Amringe.
- Iodyrite, Lake Valley: Genth, 2.
- Iron, oolitic ore: Kelley, 9.
- Jarosite: Hillebrand, 3.
- Johannsenite, Hanover: Schaller, 9; Wells, R. C., 3.
- Kainite, Eddy County: Wells, R. C., 3.
- Kaolinite, Tyrone: Wells, R. C., 3.
- Lake Valley manganese deposits: Apell.
- Langbeinite, Eddy County: Johnson, B. L.; Wells, R. C., 3.
- Lead-silver ore: Gordon, E. R.
- Leonite, Eddy County: Wells, R. C., 3.
- Lepidolite: Ross, Stevens.
- Limonite, Magdalena district: Wells, R. C., 3.
- Little Hatchet Mountains: Lasky, 10, 13.
- Lordsburg district: Lasky, 8.
- Magdalena district: Loughlin.
- Magnesite: Taft.
- Magnetite: Keyes, 101.
- Manganese minerals: Lasky, 11.
- Manganiferous iron ore, Boston Hill: Entwistle, 1, 2.
- Meerschaum: Sterrett, 1, 2.
- Melanotekite, Hillsboro: Warren.
- Meteorites: Brady, L. F., Farrington, 2; Foshag, 2; Genth, 1; Heineman; Henderson, E. P., 1, 2; Khan; Leard; Merrill, 3; Nininger, 1, 2, 3, 4, 5, 6.
- Albuquerque: Beck, 1; Eakins.
- Beenham: Leard.
- Bonanza: Shepard.
- Breece: Goldsmith.
- Canoncito: Kunz, 1.
- Costilla: Hills, R. C., 2.
- El Capitan Mountains: Howell, 2.
- Four Corners: Merrill, 4.
- Glorieta Mountain: Cohen, 1, 2; Davis, G. L.; Hills, R. C., 4; Kunz, 3, 4, 5; Nininger, 8; Stevenson, R. G.
- Grant: Henderson, E. P., 1.
- Harding County: Wylie.
- Kingston: Hovey.

- Lalande: Stevenson, R. G.
- Luis Lopez: Preston.
- Malaga: Wilson, B. H.
- Melrose: Nininger, 3, 4.
- Oscura Mountains: Hills, R. C., 3.
- Pasamonte: Foshag, 2; Nininger, 6.
- Pinon: Nininger, 3, 7.
- Pojoaque: Brady, L. F.; Nininger, 2, 3.
- Puente-Ladron: LaPaz, 1, 2; Nininger, 9, 10; Smith, C. H.
- Roy: Heineman; Nininger, 5.
- Sacramento Mountains: Foote.
- Sandia Mountains: Nininger, 1.
- Santa Fe: Henderson, E. P., 1; Nininger, 8.
- Mica deposits: Jahns, 6.
- Microlite, Harding mine: Hirschi, 2; Montgomery; Soule, 3.
- Mimetite: Bowman; Paul, F. P.
- Molybdenite, Questa molybdenum mine: Schilling, Vanderwilt, 3.
- Monazite: Muench, 1.
- Montmorillonite, Dixon: Wells, R. C., 3.
- Muscovite:
- Harding mine, pink: Wells, R. C., 3.
 - Cienequilla, analysis: Wells, R. C., 3.
 - Taos County, purple: Schaller, 2.
- New Mexico minerals: McGuiness, L.; Mikami; Northrop, 9.
- Nickel-skutterudite, Grant County: Waller.
- Nitrogen gas: Lang, W. T. B., 1, 13.
- Nontronite, Santa Rita: Wells, R. C., 3.
- Pecos mine: Stott.
- Pencatite: Hunt, W. F., 1.
- Pewabic mine: Schmitt, 5.
- Plumbojarosite: Hillebrand, 3.
- Polyhalite, Lea County: Davison; Wells, R. C., 3.
- Potash minerals: Ageton, 2; Schaller, 3, 4, 5, 6.
- Potash deposits: Harley, 3; Storms, 3.
- Potassium salts: Spicer, 2.
- Pseudobrookite, Black Range: Fries, 2.
- Pseudomorphs:
- Copper after azurite: Yeates.
 - Cubic quartz: Tarr, 2.
- Pyrolusite, De Baca County: Allen, K.
- Quartz: Tarr, 1, 2.
- Near Las Vegas: Hobbs.
- Pegmatitic: Jahns, 9.
- Radioactive minerals: Hershey.
- Ricolite: Anon., 30.
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- Samarskite, Petaca: Hess, 6; Wells, R. C., 3.
- Santa Rita mine:
- Hydrothermal alteration: Kerr, P. F.
 - Trace-element studies: Graf.
- Selenite gypsum, Fort Stanton: Hills, R. C., 1.
- Sierra County: Harley, 1.
- Silver City area: Packard; Wuestner.
- Silver ore: Krieger, 2.
- Skutterudite: Waller.
- Stauber copper mine: Holmquist, 2.
- Staurolite: Branson, O. T.
- Steeple Rock district: Russell, P. L., 6.
- Sulfur, Jemez Canyon: Mansfield, 1, 2; Wells, R. C., 3.
- Sylvite, Carlsbad: Pierce, R. A.
- Talc: Bailey, R. K.; Woods, B., 1.
- Tellurium minerals: Ballmer, 1; Crawford, W. P.
- Tetradymite, Hachita: Short; Wells, R. C., 3.
- Thulite: Northrop, 6.
- Tin, Black Range: Fries, 1; Volin.
- Torbernite, White Signal district: Leach, F. L.
- Tremolite in limestone: Patton, 1.
- Turquoise: Anon., 1; Blake, 3; Clarke, 2; Cowan; Dinsmore, 3; Fender; Jones, F. A., 10, 14; Kunz, 6; Lakes, 3; Penfield, 4; Pogue; Silliman, 2, 3; Sterrett, 3, 4, 5.
- Burro Mountains: Anon., 3, 10; Dinsmore, 2; Hidden; Knaus, 1; Paige, 5; Snow, 1; Zalinski, 1, 2.
- Cerrillos Hills: Anon., 1; Harrington, E. R., 6; Johnson, D. W., 3.
- Uranium minerals: Hershey; Keyes, 72.
- Utahite: Penfield, 2.
- Vanadate, Lake Valley: Genth, 3.
- Vanadinite: Bowman; Paul, F. P.; Penfield, 1; Keyes, 76.
- Vesuvianite: Moses.
- Willemite: Lindgren, 4; Penfield, 3; Pough.
- Wulfenite: Ingersoll.
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- Zoisite: Schaller, 1.

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- Appraisal, mines: Finlay, 2.
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- Black Hawk concentrator, Hanover: Wright, I. L., 2.

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- Blasting, Santa Rita: Ballmer, 3.
 - Coking properties, coal: Reynolds, D. A.
 - Concentration: Engel.
 - Barite: Fine.
 - Black Hawk concentrator: Wright, I. L., 2.
 - Cyanide process in New Mexico: Clark, V. V.
 - Lead-zinc: Brough; Jackson, 1; Johnson, W. M.
 - Kelly mine ore: Johnson, W. M.
 - Manganese ores: Dean, K. S.; Dean, R. S.; DeVaney, 2; Schack.
 - Mica: Jahns, 8.
 - Molybdenite: Carman, 2; Horton; Schilling.
 - Near Silver City: Brinsmade, 4.
 - Potash: Barr, J. A.; Coghill; Davison; Delacote; DeVaney, 1; Harley, 5; Hubbell; Storch; Wilson, W. P.
 - Questa molybdenum mine: Carman, 2; Schilling.
 - Tantalum ore, Harding mine: Wood, J. A., 1.
 - Conservation, oil: Dow, 2; Fell; Spurrier; Staley.
 - Construction materials, Tucumcari project: Irwin.
 - Cyanide process: Clark, V. V.
 - Development:
 - Oil and gas: *see* Oil and gas developments
 - Potash mines: Ageton, 1; Smith, H. I., 1, 4; Wroth, 2, 3.
 - Shaft sinking: May, A. J.
 - San Pedro: Brinsmade, 3. - Drilling:
 - Kearney mine, tungsten-carbide bits: Taylor, J. H.
 - Oil and gas: Barnes, K. B.; Coulter; Fagin, K. M.; Johnston, D.; Lahee, 3, 4, 5.
 - Deep wells: Daniels, 1, 2; Darton, 1, 2; Fuller, M. L., 2, 3.
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 - Engineering, petroleum: Bulnes, 1; - Carpenter, C. B.; Flood; Kinney, 2, 5; Lamb, N. R., 5.
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 - Flotation, langbeinite: DeVaney, 1.
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 - Haulage:
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 - Atwood copper mine: Storms, 5.
 - Barite: Anon., 34.
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 - Bayard area: Duriez.
 - Burro Mountains: Bush, 1.
 - Coal: Parry, V. G.; Sheridan, J. E.
 - Cooney district: Andersen, 1.
 - Copper: Gardner, E. D.; Storms, 5.
 - Eighty-Five mine: Youtz.
 - Elizabethtown: Claussen, 2.
 - Florida Mountains: Becker.
 - Fluorite: Ladoo.
 - Ground Hog mine: Richard, F. W.
 - Harding pegmatite mine: Roos.
 - Headstone district: Benjovsky, 2.
 - Lead: Jackson, 1; Richard, F. W.; Storms, 6, 7.
 - Mechanization, potash: Harley, 4; Smith, H. I., 2.
 - Mogollon district: Bush, 3; Kidder.
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 - Organ Mountains: Trumbo.
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- Placer methods: Jackson, 2.
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- Red River district: Bush, 4.
- San Pedro: Berryman.
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- ford, 2; Dinsmore, 2; Harrington,
- E. R., 30; Luther; MacDonald, D.
- F.; Morris; Thorne.
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- derson; Harrington, E. R., 6;
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- son, 1; Storms, 6, 7.
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- 1869: Raymond, 1.
 - 1870: Raymond, 2.
 - 1872: Raymond, 3.
 - 1873: Raymond, 4, 5.
 - 1874: Raymond, 7.
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 - 1891: Prince.
 - 1893: Thornton, 1.
 - 1894: Thornton, 2.
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 - 1897: Otero, 1.
 - 1899: Fleming, 1; Otero, 2.
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 - 1907: Smith, R. V.
 - 1925: Bracewell, 1.
 - 1926: Bracewell, 2.
 - 1927: Risdon, 1.
 - 1928: Risdon, 2.
 - 1929: Risdon, 3.
 - 1930: Risdon, 4.
 - 1933: Bracewell, 3.
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 - 1939: Bracewell, 7.
 - 1940: Bracewell, 8.
 - 1941: Bracewell, 9.
 - 1942: Bracewell, 10.
 - 1943: Bracewell, 11.
 - 1944: Bracewell, 12; Walter.
 - 1945: Bracewell, 13.
- 1946: Anderson, E. C., 1; Bracewell,
- 14; Wright, I. L., 3.
- 1947: Anderson, E. C., 3; Garcia, 1;
- Pierce, J., 1.
- 1948: Anderson, E. C., 4; Garcia, 2.
- 1949: Anderson, E. C., 5, 6; Calla-
- ghan, 1; Garcia, 3.
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- General:
- 1923: Ellis, 3.
 - 1931: Lang, W. T. B., 4.
 - 1933: Shoenfelt, 1.
 - 1934: Miser; Shoenfelt, 2.
 - 1935: Miser; Wells, E. H., 8.
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 - 1937: Miser; Wells, E. H., 11.
 - 1938: Andreas, 1, 2; Miser.
 - 1939: Andreas, 3.
 - 1940: Andreas, 4.
 - 1941: Kelly, J. M., 1.
 - 1942: Kelly, J. M., 2.
 - 1943: Kelly, J. M., 3; Lamb, N. R. 1.
 - 1944: Lamb, N. R., 1.
 - 1945: Kelly, J. M., 4; Lamb, N. R., 1.
 - 1946: Kelly, J. M., 5; Lamb, N. R., 2.
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 - 1948: Kinney, 1; Lea County Opera-
 - tors Committee.
 - 1949: Kelly, J. M., 6; Kinney, 4, 5; N.
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 - 1929: Rettger, 1.
 - 1932: Vietti.
 - 1936: Bybee, 2.
 - 1937: Bybee, 3.
 - 1938: Bybee, 4.
 - 1939: Secor.
 - 1940: Cole.
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 - 1942: Dickey, 3.
 - 1943: Winter.
 - 1944: Gieseck.
 - 1945: Woods, E. H., 2.
 - 1946: Boss.
 - 1947: Cantrell.
 - 1948: Henderson, C. F.
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- 1925: Wood, F. E., 1.
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- Eocene: Cope, 18.
- Loup Fork marls: Cope, 13.
- Bishops Cap cave: Bryan, W. A.
- Bison: Cotter, 2; Hay, 5; Howard, E. B., 1, 3.
- Blastoids: Cline.
- Brachiopods: Young, J. A., 1.
- Percha shale: Stainbrook, 2.
- Bryozoa: Condra; Fritz, M. A., 1, 2; Moore, R. C., 4; Prout, H. A.
- Burlington limestone: Springer, F., 1.
- Burnet Cave fauna: Schultz.
- Camarasaurus*: Mook, 1.
- Caninia*, Lower Carboniferous: Jeffords.
- Capitan reef, Permian: Adams, J. E., 7; Twenhofel, W. H.
- Carboniferous fauna: Hill, J., 1; Keyes, 13; Newberry, 5; White, C. A., 4.
- Carnivora: Cope, 17.
- Cave deposits: Bryan, W. A.; Fosberg; Howard, E. B., 3; Howard, H., 1, 3; Miller, A. H.; Schultz; Stock, 2, 3; Wetmore, 1, 2.
- Cephalopods: Reeside, 3.
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- Mississippian: Miller, A. K., 4.
- Permian: Clifton, 2; Miller, A. K., 3, 5, 6.
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- Cerro Pedernal stone culture: Bryan, K., 28.
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- Coelophysis*: Cope, 64.
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- Corals, Lower Pennsylvanian: Moore, R. C., 5.
- Coryphodon radians*: Osborn, H. F., 2.
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- Fauna: Conrad; Cope, 5; Meek, 2.
 - Flora: Gress; Lesquereux, 3.
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- Crinoid, *Sagenocrinus*: Springer, F., 2.
- Crocodile: Mook, 5, 6; Wiman, 3.
- Allognathosuchus mooki*: Simpson, G. G., 2.
- Cryptoblastus*: Cline.
- Cryptoglaux funera*: Howard, H., 2.
- Cycadeoids: Wieland, 1, 3, 4.
- Ctenostomatus* bryozoa: Condra.
- Deer: Cope, 10.
- Devonian fauna: Stainbrook, 1; Stevenson, F. V., 4.
- Diadectes lenticulus*: Case, 2.
- Diatoms: Lohman; Patrick.
- Dicotyledonous flora: Knowlton, 8.
- Dinosaurs: Colbert, 1; Cope, 62; Gilmore, 3, 4; Mook, 4; Reeside, 1; Russell, L. S.; Simpson, G. G., 6; Strawn, 1.
- Ectoconus*: Simpson, G. G., 5.
- Edaphosaurus*: Williston, 5.
- Eocene: Granger, 1.
- Bird: Cope, 18.
- Faunas: Cope, 19.
- Mammalia: Cope, 22, 25; Wortman, 3.
- Vertebrata: Cope, 6, 20, 30.
- Eryopsoides*: Douthitt.
- Fish:
- Cretaceous: Brown, R. W., 1, 2.
 - Jurassic: Koerner.
 - Paleozoic: Newberry, 7.
- Folsom deposits: Bryan, K., 24; Cook, 2; Howard, E. B., 3.
- Yuma artifacts: Renaud, 1.
- Footprints, Abo formation: Branson, E. B., 4.
- Forbesiocrinus*: Springer, F., 2.
- Fusulinids: Clair; Needham, 4.
- Pennsylvanian: Thompson, M. L., 1, 2, 5, 6.
- Permian: Dunbar, 1, 2.
- Upper Desmoinesian: Thompson, M. L., 4.
- Galisteo formation: Stearns, C. E., 2.
- Gastropods:
- Carboniferous: Girty, 4, 5.
 - Tertiary: Cockerell, 5.
- Girvanella*: Johnson, J. H., 1.
- Goniopholis kirtlandicus*: Wiman, 3.
- Gran Quivira quadrangle: Bates, 9.
- Ground sloth: Eames; Lull, 2, 3.
- Gryphaea pitcherii*: Marcou, 8.

- Paleontology (continued)**
- Guadalupe Mountains: Shumard, B. F., 2, 3, 5.
 - Guadalupian fauna: Beede, 2; Girty, 2.
 - Haploconus*: Cope, 36.
 - Hemicynoinae: Frick, 2.
 - Hemiganus*: Cope, 38, 55.
 - Hyracops socialis*: Thorpe, 1.
 - Hydracotherium*: Wortman, 1.
 - Icterid: Miller, A. H.
 - Insects: Brues; Cockerell, 6.
 - Insectivores: Matthew, 4; Reynolds, T. E., 1, 2.
 - Invertebrate:
 - Faunas: Clifton, 1; Cope, 34.
 - Mesozoic: Whitney.
 - Kritosaurus*: Brown, B., 1.
 - Lemuroids: Cope, 53.
 - Lepidodendrids: Keyes, 83.
 - Limnoscelis*: Williston, 3.
 - Little Hatchet Mountains: Lasky, 13.
 - Loup Fork fauna: Cope, 20.
 - Machaeropterus*: Stovall, 1.
 - Magdalena group: Bisbee, 1, 2.
 - Mammals: Burnet; Cope, 22, 25, 29, 44, 45, 53, 54; Cotter, 1; Frick, 3; Gazin; Granger, 3; Hay, 5; Matthew, 3, 8; Osborn, H. F., 1, 3; Reynolds, T. E., 3; Simpson, G. G., 3, 4; Stock, 1, 3; Wilson, R. W., 1; Wood, A. E.; Wortman, 3.
 - Mammoths: Burnet; Cotter, 1; Frick, 3; Howard, E. B., 1.
 - Man: Bryan, K., 27, 28, 29, 32, 35; Burnett; Cook, 1, 2; Cotter, 1; Eiseley; Figgens; Hay, 7; Hibben, 1, 2; Howard, E. B., 3, 4; Judson, 1; Roberts; Sellards; Thone.
 - Marmots: Stearns, C. E., 1.
 - Marsupials: Cope, 37, 56, 60.
 - Mastodons: Burnet; Cope, 9, 16; Cotter, 1; Frick, 3, 4; Jones, F. A., 11; Leidy, 1.
 - Meniscotherium robustum*: Thorpe, 1.
 - Mississippian fauna: Cline.
 - Mizzia*: Johnson, J. H., 5.
 - Mollusca: Clark, W. T., Jr., 1; Cockrell, 3, 4, 5; White, C. A., 7, 8, 11, 19.
 - Morrison formation: Berry; Stanton, 5. Flora: Berry; Knowlton, 7.
 - Multituberculata: Granger, 3.
 - Nautiloids: Miller, A. K., 2, 3, 6.
 - Navajosuchus*: Mook, 6.
 - Nothodectes*: Matthew, 7.
 - Nubercularia*: Johnson, J. H., 1.
 - Ochoa series: Donegan.
 - Onondagan fauna: Stevenson, F. V., 2.
 - Ostracods, Todilto limestone: Swain.
 - Ostreidae, Cretaceous: Stephenson.
 - Ovis canadensis*: Stovall, 2.
 - Owl, great horned: Wetmore, 1.
 - Paleocene fauna: Cooper, C. F.; Matthews, 9.
 - Paleozoic faunas: Bridge.
 - Pantolambda*: Cope, 36.
 - Parasaurolophus tubicen*: Wiman, 2.
 - Pennsylvanian fauna: Brill.
 - Pentaceratops sternbergii*: Osborn, H. F., 5.
 - Perissodactyls: Wortmann, 1.
 - Permian:
 - Amphibia: Case, 1.
 - Faunas: Clifton, R. L., 2; Cope, 28; Hills, J. M., 1; King, P. B., 5; King, R. E., 1; Shumard, B. J., 4, 5.
 - Guide fossils: Adams, J. E., 5.
 - Reptilia: Cope, 21; Williston, 2, 9.
 - Vertebrates: Camp, 2; Williston, 1.
 - Permo-Carboniferous vertebrates: Case, 5.
 - Petrified forest near Cerrillos: Northrop, 1; Harrington, E. R., 4.
 - Petrified wood, Mount Taylor: Woods, B., 2.
 - Physa*: Springer, A.
 - Phythonomorpha*: Cope, 2.
 - Phytosaurs: Camp, 1; Mehl, 3; Stovall, 1.
 - Pinna*: White, C. A., 5.
 - Plagiaulacidae: Cope, 58.
 - Plants: Lesquereux, 1, 2, 6; Newberry, 6.
 - Cenozoic: Knowlton, 7; LaMotte; Lesquereux, 3, 4, 5.
 - Mesozoic: Knowlton, 7; LaMotte; Lesquereux, 3, 4, 5.
 - Shelter Cave deposits: Fosberg.
 - Pleistocene:
 - Snails: Cockerell, 2.
 - Vertebrates: Sellards.
 - Pollen analyses: Sears, P. B.
 - Primates (?), Nacimiento formation: Wilson, R. W., 2.
 - Prionocyclops*: Haas, O.
 - Pseudocreodi*: Denison, R. H.
 - Psittacotherium*: Cope, 59.
 - Puerco vertebrate fauna: Cope, 37, 41, 43, 45, 46, 50, 54, 56, 61, 62; Earle; Matthew, 1; Osborn, H. F., 1; Simpson, G. G., 3.
 - Ptylorhamphus*: Miller, A. H.
 - Reefs, faunas: Mills, J. M.

- Reptiles: Cope, 1, 8, 21, 24, 62; Gilmore, 2, 3, 4, 6; Huene, 2; Marsh; Mehl, 1, 2; Romer, 2, 3, 4; Simpson, G. G., 7; Williston, 2, 3, 6, 9.
- Rhinoceros*: Cope, 51.
- Road-runner: Howard, H., 1.
- Rodents: Cope, 9; Wood, A. E.
- Ruminants: Frick, 5; Gidley; Thorpe, 2.
- Rustler formation: Donegan.
- Sacramento Mountains:
- Mississippian: Laudon, 3.
 - Upper Pennsylvanian: Penn.
- Sagenocrinus*: Springer, F., 2.
- Sandia man: Eiseley; Hibben, 1, 2, 3, 4.
- San Jose culture: Bryan, K., 35.
- San Juan Basin: Gilmore, 5.
- Eocene: Simpson, G. G., 8.
 - Paleocene: Wilson, R. W., 2.
 - Tertiary vertebrates: Simpson, G. G., 9.
- San Juan County:
- Fruitland and Kirtland formations, flora: Knowlton, 5.
 - Nonmarine Cretaceous: Stanton, 6.
 - Vertebrata: Gilmore, 1.
- Sauropod dinosaurs: Gilmore, 3, 4; Lull, 1; Mook, 4.
- Scaphopoda:
- Carboniferous: Young, J. A., 2.
 - Pennsylvanian: Young, J. A., 2.
- Schizoblastus*: Cline.
- Schizophoria*: Northrop, 12.
- Scoliomus puerensis*: Williston, 6.
- Sly Gap fauna: Stainbrook, 3.
- Snails: Cockerell, 2.
- Physa*: Springer, A.
- Sphenocodon*: Williston, 11.
- Spirifer organensis*: Greger, D. K., 1.
- Spirifer rockymontanus*: Williams, J. S.
- Stegosaurians: Lull, 1.
- Steneofiber*: Cope, 9.
- Tertiary: Conrad.
- Flora: Lesquereux, 3, 4, 5; Newberry, 6.
 - Mollusca: Cockerell, 3, 4, 5.
- Tetrapoda: Romer, 1, 5; Williston, 10.
- Triassic:
- Flora: Daugherty; Fontaine.
 - Reptiles: Mehl, 1.
- Triisodon*: Cope, 23, 47.
- Turtles: Hay, 4; Wiman, 4.
- Turkeys: Needham, 3; Shufeldt.
- Ungulata: Cope, E. D., 11; Earle, 1.
- Vermejo and Raton floras: Knowlton, 6.
- Vertebrates: Camp, 2, 3; Case, 5, 6, 7; Colbert, 3; Cope, 3, 5, 6, 7, 19, 20, 30, 31, 48, 61, 62, 63, 65, 66; Dean, B.; Hay, 1, 6, 7; Leidy, 2; Matthew, 5; Needham, 3; Welles; Williston, 8.
- Wasatch fauna: Cope, 17; Matthew, 6. Woodford black shale: Ellison.
- Xiphenax*, insect larva (?): Cockerell, 6.
- Yuma artifacts: Renaud.
- Zalambdodont insectivore: Matthew, 4.
- ### Petrology
- Abiquiu quadrangle: Wells, R. C., 3.
- Alaskite, Capitan Mountain: Sidwell, 7.
- Analcite camptonite: Ogilvie, 1.
- Analyses: *see* Rock analyses
- Andesite, artifacts: Bryan, K., 29.
- Camptonite: Ogilvie, 1.
- Capitan quadrangle: Patton, 2.
- Dikes: Sidwell, 6.
- Cerrillos Hills: Johnson, D. W., 3.
- Cerro Colorado, extinct volcano: Wright, H. E., 1.
- Cimarron Range: Smith, J. F., 3.
- Dacites, Colfax County: Stobbe, 3.
- Deming quadrangle, latites, analyses: Wells, R. C., 3.
- Dikes:
- Capitan quadrangle: Sidwell, 6.
 - Otero County: Clabaugh, 2.
- Dona Ana County: Dunham, 1.
- Eastern New Mexico: McCullough.
- Eudalyte-bearing dikes, Otero County: Clabaugh, 2.
- Extrusives, northeastern New Mexico: Collins, R. F., 1.
- Gallinas Mountains: Kelley, 4, 6.
- General: Lindgren, 6; Loew, 1, 2.
- Globe pegmatite: Wright, L. A.
- Granite in wells: Gould, 1; Lee, 29.
- Harding pegmatite: Jahns, 3; Montgomery; Soule, 3.
- Headstone district: Benjovsky, 2.
- Laughlin Peak, dacite: Stobbe, 3.
- Las Vegas Basin: Northrop, 13.
- Las Vegas quadrangle: Williamson.
- Latite, analyses: Wells, R. C., 3.
- Little Hatchet Mountains: Lasky, 13.
- Lordsburg district: Lasky, 8.
- Los Pinos Mountains: Stark, 3.
- Lucero Mesa: Kelley, 3.
- McCarty's basalt flow, Valencia County: Nichols, 8.

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Magdalena district: Loughlin; Wells, R. C., 3.
 Manzano Mountains: Reiche, 6.
 Monzonite, Magdalena district, analysis: Wells, R. C., 3.
 Moonstone pegmatite, Black Range: Kelley, 5.
 Northeastern New Mexico, volcanics: Stobbe, 1, 2.
 Northern New Mexico: Conkling, 2; Northrop, 16.
 Organ Mountains: Dunham, 1.
 Ortiz Mountains: Ogilvie, 3.
 Pegmatites: Heinrich, 1, 2; Jahns, 3, 5, 7, 9; Landes, 1, 2.
 Globe: Wright, L. A.
 Harding: Jahns, 3; Montgomery; Soule, 3.
 Moonstone: Kelley, 5.
 Petaca: Jahns, 6.
 Pegmatitic quartz: Jahns, 9.
 Pencatite: Hunt, W. F., 1.
 Precambrian, Sangre de Cristo Mountains: Sidwell, 9.
 Pumice: Benjovsky, 1.
 Pyroxic rocks, Gila River: Merrill, 1.
 Questa molybdenum mine: Larsen, E. S., 1; Schilling; Vanderwilt, 2.
 Raton area: Mertie, 1, 2, 3.
 Red River district: Park, 2; Sidwell, 4.
 Rock analyses: Clarke, 5.
 Abiquiu quadrangle: Wells, R. C., 3.
 Deming quadrangle, latites: Wells, R. C., 3.
 Magdalena district, monzonite: Wells, R. C., 3.
 San Juan Basin: Wells, R. C., 3.
 San Agustin Plains, volcanics: Powers, 2.
 San Juan Basin: Bowen; Wells, R. C., 3.
 San Juan Mountains, Tertiary volcanics: Larsen, E. S., 2.
 Scoria: Benjovsky, 1.
 Sierra Cuchillo: Jahns, 1.
 Tertiary:
 Pecos Valley, intrusives: Semmes.
 San Juan Mountains, volcanics: Larsen, E. S., 2.
 Tewan Mountains, volcanics: Iddings.
 Virginia district: Lasky, 7.
 Volcanics:
 Cerro Colorado: Wright, H. E., 1.
 McCarty's basalt flow: Nichols, 8.

Northeastern New Mexico: Collins, R. F., 2; Stobbe, 1, 2.
 San Agustin Plains: Powers, 2.
 San Juan Mountains: Larsen, E. S., 2.
 Tewan Mountains: Iddings.
 Xenoliths, Organ batholith: Dunham, 2.

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Abiquiu quadrangle: Smith, H. T. U., 1, 4, 6.
 Albuquerque area: Bryan, K., 1; Herrick, C. L., 3.
 Apache mica mine: Holmquist, 3.
 Arid regions, geologic processes: Keyes, 43.
 Arroyo cutting: Bryan, K., 30.
 Artesia oil field: Davis, M. J.
 Atwood copper group: Huntington, M. G.
 Barker Creek dome: Pishel.
 Basin and range structures: Longwell; Sauer.
 Bayard area: Lasky, 6.
 Bedding-slips, Los Pinos Mountains: Stark, 2.
 Bernalillo County: Bryan, K., 1.
 Bibliography:
 Through 1930: Wootton, 2.
 Through 1944: Bates, 4.
 Bishop Cap fluorspar prospect: Sur, 1.
 Black Range: Fries, 1; Gordon, C. H., 5.
 Block mountains: Darton, 20, 22; Herrick, C. L., 17; Johnson, D. W., 4; Keyes, 6, 15.
 Bolsons: Keyes, 1, 7, 14, 22; Tight.
 Brilliant quadrangle: Lee, 31; Mertie, 3.
 Buttress structure, volcanic plugs: Branson, E. B., 2.
 Caballo Mountains: Allen, C. A.; Clifford, 1; Larsh, 1.
 Cabezon Peak area: Freeman.
 Caldera, Jemez (Valle): Ross, 2, 4.
 Canadian River: Hill, R. T., 1.
 Capitan Mountains: Knapp.
 Capitan quadrangle, dikes: Sidwell, 6.
 Carlsbad Caverns: Bretz, 2; Haas, W. H.; Hess, 5; Lee, 34, 37, 38.
 Carrizozo lava flow: Just, 1.
 Caves: Bretz, 1.
 Bat Cave: Brady, F. W., 1.
 Carlsbad Caverns: Bretz, 2; Haas, W. H.; Hess, 5; Lee, 34, 37, 38.

- Guadalupe Mountains: Bretz, 2; Burnet.
- Caja del Rio Puerco: Bryan, K., 25.
- Cerrillos Hills: Johnson, D. W., 3.
- Cerro Colorado volcano: Wright, H. E., 1.
- Channel changes, Rio Puerco: Bryan, K., 12.
- Channel cutting, Rio Salado: Bryan, K., 9.
- Chaves County: Merritt.
- Cimarron Range: Smith, J. F., 2, 3.
- Clastic plugs and dikes: Parker, B. H., 1, 2.
- Coal fields: Kirk, C. T., 2.
- Colorado Plateau: Moore, R. C., 1.
- Conchas dam: Crosby.
- Cones, volcanic: Marcou, 13.
- Contact manganese mine: Russell, P. L., 1.
- Cornudas Mountains: Clabaugh, 1;
- Concretions: Gardner, J. H., 1. Timm; Zapp.
- Craters, volcanic: Keyes, 32.
- Crater Springs, Rio Salado: Harrington, E. R., 29.
- South-central New Mexico: Perkins.
- Dam sites: Bryan, K., 15.
- Cactus Flat: Nye, 1.
- Conchas: Crosby.
- El Vado: Wells, E. H., 4.
- No. 3 Reservoir site, Carlsbad project: Meinzer, 5.
- Red River: Powell, W. C., 2.
- State Line: Bryan, K., 11.
- Zuni: Anon., 12.
- Deming quadrangle: Darton, 17.
- Dona Ana County: Dunham, 1.
- Drying cracks, Animas Valley: Lang, W. T. B., 14.
- Earthquakes: Bagg, 2; Northrop, 10, 15; Reid, H. F.; Thomas.
- Elk Mountain mica deposit: Holquist, 1.
- El Vado dam site: Wells, E. H., 4.
- Eolian dam, Tucumcari: Dobrovolny, 2.
- Erosion:
- Arid regions: Bryan, K., 10, 16, 31; Church; Keyes, 41, 42, 43, 44, 46, 49, 51, 53, 54, 58, 84; Reiche, 4.
 - Arroyo cutting: Bryan, K., 4, 30;
 - Arroyo meandering: Leighly.
 - Channel cutting: Bryan, K., 9, 12; Rich, J. L., 2; Stevenson, J. J., 7.
 - Deflation: Keyes, 49, 51.
- Eolian: Blackwelder; Bryan, K., 34; Keyes, 42, 44, 46; Stuntz.
- Gravel as resistant rock: Paige, 4; Rich, J. L., 1.
- Pediments: Bryan, K., 19, 22, 23; Campbell, 1; Church; Koschmann, 1; McCann, 1; Ogilvie, 2; Smith, H. T. U., 2.
- Solution and fill: Lee, 35, 36.
- Stream cutting: Bryan, K., 4, 9, 12, 30; Rich, J. L., 2; Stevenson, J. J., 7.
- Terraces: Antevs, 4; Bryan, K., 23.
- Espanola Valley: Denny, 3.
- Estancia Valley: Keyes, 40; Meinzer, 1.
- Explosion craters: Darton, 15.
- Faults:
- Post-bolson: Dake, 2.
 - Recent, Organ Mountains: Reiche, 1.
 - Sangre de Cristo Mountains: Cabot.
 - Southwest of Los Pinos Mountains: Stark, 2.
 - Southwestern New Mexico: Darton, 10.
 - Tularosa Basin: Talmage, 3.
- Fault scarps:
- Organ Mountains: Reiche, 1.
 - Sangre de Cristo Mountains: Cabot.
 - Tularosa Valley: Talmage, 3.
- Florida Mountains: Becker.
- Flows: *see* Lava flows
- Folding:
- Lincoln County, Chupadera beds: Talmage, 4.
- Northeastern New Mexico: Van Diest, 2.
- Permian: Wheeler, R. R., 2.
- Fracture in potash beds: Cathcart.
- Frost marks: Lang, W. T. B., 15.
- Gallinas Mountains: Case, 4; Kelley, 4, 6.
- General: Abert; Antisell; Blake, 1, 2; Conkling, 1, 3; Cope, 12, 15; Dana; Darton, 12, 31, 33; Davis, W. M.; Emmons, S. F., 1, 2, 3; Emory, 1, 2, 3; Gilbert, 1, 2; Gordon, C. H., 4; Griffin; Hayden, 1, 2, 3, 4; Herrick, C. L., 4; Hill, R. T., 2, 4; Howell, 1; Jewett; Johnson, D. W., 5; Jones, F. A., 12; Keyes, 63, 126; King, P. B., 2; Leconte, 1; Loew, 1, 3; Long; MacFarlane, J.; Marcou, 1, 2, 3, 4, 5; Marcy; Newberry, 1, 3, 4; Stevenson, J. J., 1; Wheeler, G. M., 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11; Wizlizenus.

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Gila region: Blake, 6; Merrill, 1.

Glaciation: Ellis, 8, 11; Ray, L. L., 2;
Siebenthal, 1; Smith, H. T. U., 7;
Stone, G. H., 1, 4.

Gran Quivira quadrangle: Bates, 9.

Ground Hog mine: Lasky, 12.

Guadalupe County, asphalt deposits:
Gorman.Guadalupe Mountains: Baker, C. L., 3;
Tarr, R. S., 3; Wheeler, R. R., 2.Harding pegmatite mine: Jahns, 3, 7;
Soule, 3.**Heavy minerals:**Transportation and deposition: Rit-
tenhouse, 2.

White Sands: Needham, 9.

Ice caves: Harrington, E. R., 1, 9; Har-
rison, C.; Lee, 39; MacClary; Peck.Iron Mountain district: Jahns, 2, 5;
Storms, 1, 2.

Jemez (Valle) caldera: Ross, 2, 4.

Jemez Mountains: Church.

Joints, columnar in volcanics: Hunt, C.
B., 5.Jornada del Muerto: Keyes, 14, 22;
Shumard, G. G., 2.

Kilbourne Hole: Reiche, 3.

Koehler quadrangle: Lee, 31; Mertie, 3.

Laccoliths: Keyes, 65.

Ladron Mountains: Noble.

Lake Valley manganese deposits:
Apell.

Lake Otero: Herrick, C. L., 16.

Lake San Agustin: Powers, 1.

Lakes, ephemeral: Keyes, 2.

Landslides: Cross, 1.

Caused by lightning: Workman.

Chaco Canyon: Dodge.

Periglacial: Smith, H. T. U., 3.

Las Vegas Basin: Northrop, 13.

Las Vegas quadrangle: Swanson.

Lava flows:

Banding: Nichols, 5.

Collapse-depressions: Nichols, 7.

Grooved surfaces: Nichols, 4.

Pressure-ridges: Nichols, 7.

Recent: Harrington, E. R., 5; Just,
1; Keyes, 90; Nichols, 3, 4, 5, 6, 7,
8; Tarr, R. S., 2.

Squeeze-ups: Nichols, 3.

Units: Nichols, 2.

Viscosity: Nichols, 6; Ross, 3.

Little Florida Mountains: Lasky, 11.

Little Hatchet Mountains: Lasky, 10,
13.

Lincoln County: Knapp.

Llano Estacado: Baker, C. L., 1; Cum-
mins, 1; Price, W. A., 3.

Lordsburg district: Lasky, 4.

Los Pinos Mountains: Stark, 1, 2, 3.

Lucero Mesa: Kelley, 3.

Luna County: Darton, 14.

McCarty's lava flow: Nichols, 7, 8.

Magdalena district: Loughlin.

Magdalena Mountains: Gordon, C. H.,
5.

Manzano Mountains: Reiche, 6.

Mapping with aerial photos: Loel.

Meteorite crater: LaPaz, 3.

Moonstone pegmatites: Kelley, 5.

Moreno Valley: Ray, L. L., 1, 3; Smith,
J. F., 1.Mount Taylor region: Dutton, 2; Har-
rington, E. R., 2; Hunt, C. B., 1, 3,
4; Johnson, D. W., 6.

Mud deposits: Cope, 33.

Mud balls, armoured: Bell.

Nacimiento Mountains: Northrop, 14.

Necks: *see* Plugs and necksNiggerhead manganese deposit: Rus-
sell, P. L., 7.Northeastern New Mexico: Baldwin;
Garrett: Harley, 2; St. John; Stern-
berg.Northern New Mexico: Conkling, 1, 2;
Northrop, 16; Stevenson, J. J., 5.Oil and gas traps: Barnes, F. C., 5;
Bartley, 2.

Oolites, Carlsbad Caverns: Hess, 5.

Ore deposits as related to structures:
Billingsley; Newhouse, 1, 2.

Organ Mountains: Dunham, 1, 2.

Pecos mine: Stott.

Pecos Valley: Morgan, 2; Theis, C. V.,
11.

Pedestal rocks: Bryan, K., 2, 3, 8.

Pediments:

Granite Gap: Bryan, K., 22.

Magdalena Mountains: Koschmann,
1; Smith, H. T. U., 2.

Rio Puerco: Bryan, K., 23.

Santa Fe area: Campbell, 1; Ogilvie,
2.

Socorro area: Bryan, K., 19.

Peerless lead-zinc mine: Soule, 5.

Pegmatites: Hess, 4, 6, 7; Hirschi, 1;
Jahns, 3, 6, 7, 9; Just, 2; Kelley, 5;
Landes, 1.

Pewabic mine area: Schmitt, 5.

Pisolites, spring deposits: Northrop, 2,
3.

- Plication, coal measures: Van Diest, 2.
- Plugs and necks, volcanic: Branson, E. B., 2; Harrington, E. R., 2; Hunt, C. B., 4; Johnson, D. W., 6.
- Polished rocks, Cornudas Mountains: Lang, W. T. B., 16.
- Post-bolson faulting: Dake, 2.
- Potholes, high level: Peters, J. R.
- Puertecito area: Wells, E. H., 2.
- Questa molybdenum mine: Schilling, Vanderwilt, 2.
- Raton Mesa: Lee, 25, 30; Mertie, 1.
- Raton quadrangle: Lee, 31; Mertie, 3.
- Red River dam sites: Powell, W. C., 2.
- Rio Grande Canyon: Bryan, K., 18.
- Rio Grande depression: Bryan, K., 26; Needham, 8; Northrop, 4; Simpson, G. G., 9.
- Rio Puerco area: Bryan, K., 23; Renick, 2; Wright, H. E., 2.
- Rio Salado, channel cutting: Bryan, K., 9.
- Rock slide: Workman.
- Sacramento Mountains: Pray.
- San Acacia area: Denny, 2, 4.
- San Agustin Plains: Powers, 2.
- San Andres Mountains: Baker, C. L., 8.
- Sand dunes: Bryan, K., 36.
- Sandia Mountains: Ellis, 2; Harrington, E. R., 17; Keyes, 98.
- Sands, modern sources, Rio Grande Valley: Rittenhouse, 3.
- Sangre de Cristo Mountains: Cabot; Conkling, 1; Dana; Gruner, 1.
- San Juan Basin: Barnes, F. C., 1, 2, 3, 4, 5; Cope, 7; Cross, 5; Dane, 4; Darton, 5, 6; Gregory, 1, 2; Harrington, E. R., 23; Hunt, C. B., 3; Kelley, 12; Kirk, C. T., 1; Sears, J. D., 2; Silver, 3; Simpson, J. H.
- Oil and gas fields: Colton.
- San Miguel County: Allison.
- Santa Fe area: Blake, 5.
- Santa Rita area: Ballmer, 2; Paige, 11; Spencer.
- Sedimentation: Brown, C. B.
- Lakes: Bryan, K., 16; Robinson, H. F., 1, 2.
- Pecos River: Sidwell, 3.
- Recent: Rittenhouse, 2, 3.
- Rio Grande: Fiock; Happ, 1, 2; Stabler; Rittenhouse, 2, 3.
- South Canadian River: Sidwell, 1.
- Zuni watershed: Bryan, K., 10.
- Sediments, source of:
- Alaskite: Sidwell, 7.
- Basalts: Sidwell, 8.
- Precambrian rocks: Sidwell, 9, 10.
- Shiprock: Vokes.
- Sierra Cuchillo: Jahns, 1.
- Sierra del Oro: Keyes, 62.
- Silver City area: Hernon; Paige, 4, 7.
- Sinkholes, south-central New Mexico: Perkins.
- Soil: Means.
- Mesilla Valley: Nelson, J. W., 2.
- Middle Rio Grande Valley: Nelson, J. W., 1.
- Pecos Valley: Means.
- Solution and fill: Lee, 35, 36.
- Solution, Pecos Basin: Morgan, 3.
- State line dam site: Bryan, K., 11.
- Steeple Rock district: Russell, P. L., 6.
- Stream trenching, Silver City area: Rich, J. L., 2.
- Subsurface mapping: Dahm.
- Tectonics: Darton, 28, 35.
- Terraces: Antevs, 4; Bryan, K., 23; Keyes, 61.
- Aggrated: Keyes, 34.
- Traps, structural: Dobbin, 2.
- Tularosa Basin: Calvin.
- Tusas-Tres Piedras area: Butler, A. P., 1, 2.
- Valle (Jemez) caldera: Ross, 2, 4.
- Ventifacts: Needham, 2.
- Virginia district: Lasky, 7.
- Volcanoes: Harrington, E. R., 5; Herrick, C. L., 4; Hill, R. T., 10; Hunt, C. B., 4; Lee, 18; Marcou, 13; Williams, H.; Wright, H. E., 1.
- Weathering processes and products: Reiche, 5.
- White Eagle fluorspar mine: Soule, 2.
- White Rock Canyon: Emmanuel.
- White Sands area: Botkin; Herrick, C. L., 11; Keyes, 100.
- Wind erosion: Blackwelder; Keyes, 42, 44, 46; Stuntz.
- Wind-polished rocks: Bryan, K., 34.
- Zuni dam: Eckel, E. B.

Physiographic Geology

- Afton craters: Lee, 8.
- Aggrated terraces, Rio Grande: Keyes, 34.
- Albuquerque region: Herrick, C. L., 10.
- Arroyo cutting: Bryan, K., 4, 30.
- Bernalillo County: Bryan, K., 1.

Physiographic Geology (continued)

- Block mountains: Herrick, C. L., 17; Johnson, D. W., 4; Keyes, 6.
- Bolson plains: Keyes, 1, 7, 39; Tight.
- Canyons, northeastern New Mexico: Lee, 3.
- Carlsbad Caverns: Horberg.
- Caves, Guadalupe Mountains: Baker, C. L., 3; Bretz, 2.
- Ceja del Rio Puerco: Bryan, 25.
- Cerro Blanco, southernmost glaciated mountain: Smith, H. T. U., 7.
- Chama Valley: Smith, H. T. U., 5.
- Channel changes, Rio Puerco: Bryan, K., 12.
- Channel cutting, Rio Puerco: Bryan, K., 4, 9.
- Climatic variations: Antevs, 3, 4; Huntington, E.
- Clinoplains, Rio Grande: Herrick, C. L., 15.
- Clovis site: Price, W. A., 2.
- Craters: Darton, 15; Perkins.
- Curry County: Theis, 1.
- Depressions, High Plains: Judson, 2.
- Drainage systems: Tarr, R. S., 1.
- Earth patterns: Turley, 1.
- Eastern New Mexico: Hill, R. T., 4; Turley, 1.
- Eolian dam, Tucumcari: Dobrovolny, 2.
- Ephemeral lakes: Keyes, 2.
- Erosion:
- Arid regions: Bryan, K., 10, 31; Church; Keyes, 41, 42, 43, 44, 46, 49, 51, 53, 54, 58, 84; Reiche, 4.
 - Channel cutting: Bryan, K., 4, 9, 12, 30; Leighly; Rich, J. L., 2; Stevenson, J. J., 7.
 - Eolian: Blackwelder; Bryan, K., 34; Keyes, 42, 44, 46; Stuntz.
 - Gravel as resistant rock: Paige, 4; Rich, J. L., 1.
 - Stages, Arizona Plateau: Reiche, 4.
 - Surfaces: Church; McCann, 1. *See also* Pediments
- Estancia Plains: Keyes, 40.
- Fault scarps:
- Organ Mountains: Reiche, 1.
 - Tularosa Valley: Talmage, 3.
- Folsom area: Brown, B., 3.
- Gallina quadrangle: Case, 4.
- General: Davis, W. M.; Dutton, 1; Fairbanks; Gilbert; Hill, R. T., 3; Howell, 1; Huntington, E.; Jewett; Johnson, D. W., 5; Keyes, 29, 55.
- Glaciation: Ellis, 11; Smith, H. T. U., 7; Stone, G. H., 4.
- Gran Quivira quadrangle: Bates, 9.
- Gravel plains: Rich, J. L., 1.
- Gypsum dunes: Keyes, 100; Talmage, 1.
- High Plains: Johnson, W. D.
- Jornada del Muerto: Keyes, 22.
- Karst topography: Price, W. A., 1.
- Lake basins, eolian origin: Keyes, 42.
- Lakes, ephemeral: Keyes, 2.
- Lake San Agustin: Powers, 1.
- Landslides, periglacial: Smith, H. T. U., 3.
- Little Hatchet Mountains: Lasky, 13.
- Luna County: Darton, 14.
- Magdalena district: Koschmann, 1; Loughlin.
- Meandering arroyos: Leighly.
- Mesa de Maya: Keyes, 37.
- Meteoritic scars: Turley, 2.
- Monadnocks: Keyes, 41.
- Moreno Valley: Ray, L. L., 1, 3.
- Mount Taylor area: Dutton, 2; Hunt, C. B., 4; Johnson, D. W., 6.
- Navajo Reservation: Gregory, 1, 2.
- Northeastern New Mexico: Lee, 18; St. John.
- Northern New Mexico: Northrop, 16; Stevenson, J. J., 5, 7.
- Ortiz Mountains: Ogilvie, 2.
- Otero salt basin: Herrick, C. L., 16.
- Pecos Valley: Lee, 5; Theis, 11.
- Pedestal rocks: Bryan, K., 2, 3, 8.
- Pediments:
- Granite Gap: Bryan, K., 22.
 - Magdalena Mountains: Koschmann, 1; Smith, H. T. U., 2.
 - Rio Puerco: Bryan, K., 23.
 - Santa Fe area: Campbell, 1.
 - Socorro area: Bryan, K., 19.
- Physiographic provinces: Keyes, 78.
- Raton Mesa: Lee, 30; Levings.
- Re-eroded channel: Stevenson, J. J., 7.
- Rio Grande Valley: Bryan, K., 26; Henderson, J.
- Rio Puerco area: Bryan, K., 12, 23; Wright, H. E., 2.
- Roosevelt County: Theis, 1.
- San Acacia area: Denny, 2, 4.
- San Andres Mountains: Baker, C. L., 8.
- Sand dunes: Bryan, K., 36; Melton, 4.
- Sandia Mountains, depressions: Reagan, 4.
- Sangre de Cristo Mountains: Lee, 26.
- San Jose Valley: Nichols, 1.

- San Juan Basin: Kelley, 12.
 San Juan Mountains: Atwood, W. W., 2.
 San Luis Valley: Atwood, W. W., 1.
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 Silver City quadrangle: Paige, 4, 7; Rich, J. L., 2.
 Sinkholes: Perkins.
 Patterns: Melton, 3.
 Slope retreat: Bryan, K., 30.
 Southern New Mexico: Fairbanks.
 Southwestern New Mexico: Schwenneisen, 1.
 Stream profiles:
 Gila River: Herron, 2.
 Mora River: Herron, 1.
 Pecos River: Herron, 1.
 Rio Grande: Herron, 1.
 Stream trenching: Rich, J. L., 2.
 Terraces: Antevs, 4; Bryan, K., 23; Keyes, 34, 61.
 Tularosa Basin: Meinzer, 3.
 Tusas-Tres Piedras area: Butler, A. P., 1, 2.
 Valencia County: Johnson, D. W., 2.
 Valles (Jemez) caldera: Ross, 2.
 Volcanic craters: Keyes, 32.
 Volcanos: Hill, R. T., 10.
 White Rock Canyon: Emmanuel.
 White Sands area: Herrick, C. L., 11.
 Zuni Mountains: Keyes, 80, 84.
 Zuni Plateau: Dutton, 2.
 Zuni Salt Lake: Darton, 4, 34.
- Water**
- Albuquerque area, ground water: Lee, 6.
 Animas Valley, ground water: McClure, 1; Schwennesen, 1.
 Artesian water: Carpenter, L. G.; Fiedler, 1, 3, 6, 7; Fisher, 2; Gregory, 1; Hill, R. T., 7; Keyes, 14; Lee, 6; Meinzer, 3; Paige, 7; Renick, 1; Robinson, T. W., 1; Sayre, 1; Schwennesen, 1; Sears, J. D., 1.
 Belen area, ground water: Lee, 6.
 Bernalillo County, ground water: Ugrinic.
 Bibliography:
 Groundwater: Collins, W. D., 1; Darton, 1, 2; Fuller, M. L., 1, 4; Holland; Meinzer, 8; Waring, 2.
 Surface water:
 Analyses: Collins, W. D., 1.
- Unpublished data: Holland.
 Bonito River basin, stream investigations: Neel, 5.
 Borings, deep: Darton, 1, 2.
 Brilliant quadrangle, ground water: Lee, 31.
 Canadian River basin:
 Floods: Murphy, E. C., 1.
 Ground water: Yeo, 1.
 Quality, surface water: Collins, W. D., 1, 2; U. S. Geol. Survey, 14.
 Stream measurements: Dalrymple; French, 1, 2, 3, 4, 5, 6, 7, 8, 9; Hinderlider, 1, 2; Hoyt, 1, 4; Neel, 1, 2, 3, 4, 5, 6, 7; May, C. A.; U. S. Geol. Survey, 11; Williams, G. R.
 Carlsbad irrigation project: Meinzer, 5.
 Caves, ground water: Bretz, 1.
 Chloride in water: Burr.
 Colfax County, ground water: Griggs.
 Cottonwood Creek, stream investigations: Neel, 7.
 Curry County, ground water: Theis, 1.
 De Baca County, ground water: Bryan, K., 6.
 Deming area, ground water: Darton, 9, 14, 17.
 Duncan-Virden Valley, ground water: Morrison, 2; Turner, S. F., 1, 2, 3; U. S. Geol. Survey, 13.
 Earth tides, well water: Robinson, T. W., 2.
 Eastern New Mexico, ground water: Hill, R. T., 6; Johnson, W. D.; Van Diest, 1.
 Eddy County, ground water: Fuller, M. L., 3.
 Encino Valley, ground water: Meinzer, 2.
 Estancia Valley, ground water: Meinzer, 1, 2.
 Floods:
 Canadian River basin: Dalrymple; Murphy, E. C., 1.
 Pecos River basin: Dalrymple; Murphy, E. C., 1, 2.
 Rio Grande basin: Jarvis; Murphy, T. C., 1, 2; Murphy, J. P.
 San Miguel County: Fish.
 Fluctuations, ground-water levels during earthquakes: Thomas.
 Fluorine in water: Clark, J. D., 2.
 Gaging stations, index to measurements: U. S. Geol. Survey, 8, 9.
 General: Elmendorf; Fiedler, 2; Hill, R. T., 5; Piper, 1, 2.

Water (continued)**Gila River basin:**

Quality, surface water: Collins, W. D., 1, 2; U. S. Geol. Survey, 14.

Stream investigations: Black, 2; U. S. Bur. Reclamation.

Stream measurements: French, 1, 2, 3, 4, 5, 6, 7, 8, 9; Hinderlider, 1, 2; Neel, 1; U. S. Geol. Survey, 7, 12; Williams, G. R.

Gran Quivira quadrangle, ground water: Bates, 9.

Grant County, ground water: Schwenzenen, 1.

Ground water: listed under various areas.

Hachita Valley, ground water: Schwenzenen, 1.

Hidalgo County, ground water: Morrison, 2; Turner, S. F., 1, 2, 3; U. S. Geol. Survey, 13.

High Plains, ground-water recharge: Theis, 5.

Hot Springs basin, ground water: Powell, W. C., 3.

Infiltration ditches: Meinzer, 3; Morrison, 1, 2.

Jemez Plateau, springs: Kelly, C. Jornada del Muerto, ground water: Keyes, 14; Lee, 6.

Koehler quadrangle, ground water: Lee, 31.

La Jara Creek, stream investigations: Neel, 6.

La Mesa area, ground water: Lee, 6.

Las Palomas-Monticello area, stream investigations: Neel, 3.

Lea County, ground water: Nye, 2, 3; Theis, 7.

Level changes, ground water: Bryan, K., 14.

Little Hatchet Mountains, ground water: Lasky, 13.

Llano Estacado, ground water: Baker, C. L., 1.

Lordsburg district, ground water: Lasky, 8.

Luna County, ground water: Darton, 8, 9, 14, 17; White, W. N., 2.

Major Johnson springs: Theis, 9.

Mesilla area, ground water: Barker, F. C.; Lee, 6; Slichter, 1, 2.

Mimbres Valley, ground water: Darton, 8, 9, 14, 17; Fiedler, 4; Theis, 8; White, W. N., 1, 2.

Mineral waters: Morrison, 2; Peale; U. S. Bur. Mines, 1, 2.

Mora River, stream investigations: Neel, 2.

Mount Taylor coal field, ground water: Hunt, C. B., 3.

Navajo Reservation, ground water: Gregory, 1.

Ocate River, stream investigations: McClure, 3.

Ogallala formation, Llano Estacado: Theis, 3.

Ojo Caliente, hot springs: Lindgren, 7.

Pecos River basin:

Floods: Murphy, E. C., 1, 2.

Ground water: Fisher, 2; McClure, 4; Morgan, 2, 3; Robinson, T. W., 1;

Sayre, 1, 2; Stafford; Theis, 11, 12.

Quality, surface water: Collins, W. D., 1, 2; McClure, 4; U. S. Geol. Survey, 14.

Stream investigations: Nat. Res. Planning Bd.

Stream measurements: Dalrymple; French, 1, 2, 3, 4, 5, 6, 7, 8, 9; Hoyt, 1, 2, 3; May, C. A.; Neel, 1; Stabler; Taylor, T. U.; U. S. Geol. Survey, 11; Williams, G. R.

Pinos Wells Valley, ground water: Meinzer, 2.

Playas Valley, ground water: Schwenzenen, 1.

Portales Valley, ground water: Theis, 1, 6; U. S. Geol. Survey, 13.

Public water supply: Meinzer, 3; Renick, 1; Schwenzenen, 1.

Pumping: Barker, F. C.; Darton, 8, 9; Meinzer, 1, 2.

Tests: Darton, 9; Meinzer, 3; Slichter, 1, 2; Turner, S. F., 2.

Quality, ground water: Darton, 17; Fiedler, 5, 6, 9; Fisher, 2; Howard, C. S., 1, 2; Keyes, 14; Lee, 6; McClure, 4; Morrison, 2; Nye, 2, 3; Renick, 1, 4; Schwenzenen, 1, 2; Theis, 1; U. S. Geol. Survey, 14; White, W. N.

Quality, spring water: Clarke, 6.

Quality, surface water: see Canadian River basin; Gila River basin; Pecos River basin; Rio Grande basin; San Francisco River basin; San Juan River basin.

Quantity, ground water: Darton, 8, 9, 14, 17; Fiedler, 1, 3, 4, 6; Fisher, 2; Lee, 6; Meinzer, 2, 3; Morgan, 1;

- Sayre, 1; Schwennesen, 2; Slichter, 1; Theis, 1, 6, 7; White, W. N., 1, 2.
- Raton quadrangle, ground water: Lee, 31.
- Rio Grande basin:**
- Floods: Jarvis; Murphy, E. C., 1, 2; Murphy, J. P.
 - Ground water: Barker, F. C.; Bryan, K., 26; Follansbee; Griswold; Howard, C. S., 1; Lee, 6; Nat. Res. Comm., 1; Slichter, 1, 2; Theis, 4, 10.
 - Quality, surface water: Collins, W. D., 1, 2; McClure, 4; Scofield; U. S. Geol. Survey, 14.
 - Silt load: Flock; Stabler.
 - Stream investigations: Murphy, J. P.; Nat. Res. Comm., 1, 2; U. S. Geol. Survey, 2.
 - Stream measurements: French, 1, 2, 3, 4, 5, 6, 7, 8, 9; Hoyt, J. C., 1, 2, 4; May, C. A.; Neel, 1; Newell, F. H., 3, 4; Stabler; U. S. Geol. Survey, 2, 3, 4, 11; Williams, G. R.
- Rio Penasco basin, ground water: Renick, 3.
- Rio Puerco basin:**
- Ground water: Wright, H. E., 2, 3.
 - Stream investigations: Neel, 4.
 - Stream measurements: French, 1; U. S. Geol. Survey, 12.
- Rio Salado, crater springs: Harrington, E. R., 29.
- Roosevelt County, ground water: Theis, 1.
- Roswell Artesian Basin, ground water: Brown, R. H.; Fiedler, 1, 2, 3, 5, 6, 7, 8, 9; Fisher, 2; McClure, 2; Meinzer, 8; Morgan, 1; U. S. Geol. Survey, 13.
- Salt water: Darton, 23; Meinzer, 2; Phalen, 2; Renick, 2; Robinson, T. W., 1; Theis, 12.
- Sandoval County, ground water: Renick, 1, 2, 4.
- San Francisco River basin:**
- Quality, surface water: Collins, W. D., 1, 2; U. S. Geol. Survey, 14.
 - Stream investigations: Black, 2; U. S. Bur. Reclamation.
 - Stream measurements: French, 1, 3, 4, 5, 6, 7, 8, 9; Hinderlider, 1; May, C. A.; Meder; Neel, 1; Stabler; U. S. Geol. Survey, 7, 12; Williams, G. R.
- San Jose Valley, ground water: Renick, 2.
- San Juan Basin, ground water: Barrows; Darton, 5, 6; Gregory, 1; Sears, J. D., 1; Waring, 1.
- San Juan River basin:**
- Quality, surface water: Collins, W. D., 1, 2; U. S. Geol. Survey, 14.
 - Stream investigations: Barrows; Yeo, 2.
 - Stream measurements: French, 1, 3, 4, 5, 6, 7, 8, 9; Hinderlider, 1, 2; LaRue; May, C. A.; Meder; Neel, 1; U. S. Geol. Survey, 12.
- San Luis Valley, ground water: Schwennesen, 1.
- San Miguel County, floods: Fish.
- San Simon Valley, ground water: Schwennesen, 2.
- Santa Fe area, ground water: Lee, 6.
- Silver City quadrangle, ground water: Paige, 7.
- Socorro County, ground water: Black, 1; Bryan, K., 5.
- South-central New Mexico, ground water: Meinzer, 3; Sayre, 3; Slichter, 2.
- Southeastern New Mexico, ground water: Hoots; Lee, 35, 36; Theis, 5.
- Southern New Mexico, ground water: Slichter, 2.
- Southwestern New Mexico, ground water: Schwennesen, 1, 2.
- Springs:** Dane, 2; Darton, 14; Fisher, 2; Gregory, 1; Harrington, E. R., 22; Lee, 6; Lindgren, 6; Meinzer, 3, 5, 6; Paige, 7; Peale; Renick, 1; Stearns, N. D.; Theis, 9, 12; White, W. N., 1; Winchester, 2.
- Saline: Clark, J. D., 1.
- Thermal: Lindgren, 6; Paige, 7; Peale; Powell, W. C., 1; Renick, 1; Stearns, N. D.
- Stream investigations:**
- Bonito River system: Neel, 5.
 - Cottonwood Creek: Neel, 7.
 - Gila River: Black, 2; U. S. Bur. Reclamation.
 - Index: Jones, B. E.
 - LaJara Creek: Neel, 6.
 - Las Palomas-Monticello: Neel, 3.
 - Mora River: Neel, 6.
 - Ocate River: McClure, 3.
 - Pecos River: Nat. Res. Planning Bd.
 - Rio Grande basin:** Murphy, J. P.; Nat. Res. Comm., 1, 2; U. S. Geol.

Water (continued)

Survey, 2.

Rio Puerco: Neel, 4.

San Francisco River: Black, 2; U. S. Bur. Reclamation.

San Juan River: Barrows; Yeo, 2.

Sunshine Valley: Healy.

Stream measurements: *see* Canadian River basin; Gaging stations; Gila River basin; Pecos River basin; Rio Grande basin; Rio Puerco basin; San Francisco River basin; San Juan River basin; Tularosa Basin; and Zuni River basin.

Stream profiles:

Gila River: Herron, 2.

Mora River: Herron, 1.

Pecos River: Herron, 1.

Rio Grande: Herron, 1.

Sunshine Valley, stream investigations: Healy.

Taylor Creek district, ground water: Hill, J. M., 2.

Torrance County, ground water: Black, 1; Fuller, M. L., 3; Meinzer, 1, 2.

Tularosa Basin:

Ground water: Meinzer, 3; Powell, W. C., 1.

Stream measurements: French, 1, 7; Neel, 1; U. S. Geol. Survey, 11.

Tyrone area, ground water: Paige, 9. Vaughn area, ground water: Meinzer, 2, 3.

Virden Valley, ground water: Turner, S. F., 1, 2.

Water table: Barker, F. C.; Darton, 8, 9, 14, 17; Fiedler, 4; Lee, 6; Meinzer, 2, 3; Morgan, 1; Renick, 4; Robinson, T. W., 2; Sayre, 1; Schwennesen, 1, 2; Theis, 1, 4, 6, 7, 10; Turner, S. F., 2; White, W. N., 1, 2.

Well records: Darton, 1, 2, 6, 9, 14, 24, 30; Fisher, 2; Fuller, M. L., 2, 3; Gregory, 1; Hoots; Lee, 6, 35, 36; McClure, 1; Meinzer, 2, 3; Morgan, 1; Morrison, 1; Renick, 3, 4; Sayre, 1; Theis, 1, 7; White, W. N.

Zuni River basin, stream measurements: U. S. Geol. Survey, 7, 12.

Maps

by ROBERT H. WEBER

INTRODUCTORY NOTE

In addition to the geologic maps indexed in the preceding section, several other types of maps have been issued that may be of value in studies relating to the geology of the State. Maps of this category are listed in the following section under the headings described below.

Base maps show the works of man (roads, towns, railroads, irrigation ditches, etc.); drainage; boundaries of counties, land grants, national forests, etc.; the township and range network; and other features, depending on the scale and type of map. Base maps do not show geology or topography.

Mineral resources maps show the occurrences of specific mineral commodities. For some commodities, features related to their exploration, preparation, and transportation are depicted.

Topographic maps show, by means of contours, the shape and elevation of the land surface; drainage and the works of man are generally shown also.

Aerial photographs and mosaics are finding increasing use as substitutes for conventional maps of areas for which adequate map coverage is unavailable, or where the greater detail of surface features provided by photographs is required.

BASE MAPS

STATE MAPS

State of New Mexico. Scale 1:500,000 (about 8 miles to 1 inch); 1922. (2 sheets.) U. S. Geological Survey, Washington, D. C.

State of New Mexico. Scale 12 miles to 1 inch; 1936. General Land Office, Washington, D. C. A geographic map in six colors, showing national forests, parks, monuments, land grants, Indian reservations, military reservations, reclamation projects, mountain ranges, and drainage. (Out of print. A new edition is scheduled for release in 1955.)

State of New Mexico. Scale 12 miles to 1 inch; revised to September 1, 1953. New Mexico State Highway Department, Santa Fe. A geographic map, showing roads, railroads, towns, national forests, grants, range network, and drainage.

COUNTY MAPS

Issued as ozalid prints by the New Mexico State Highway Department, Santa Fe, New Mexico. Maps showing the roads of all classes, drainage, and land boundaries including townships and sections, are available for all counties at scales of from 1 mile to 2 miles to 1 inch.

QUADRANGLE MAPS

Planimetric maps of 15-minute quadrangles are issued as ozalid prints by the U. S. Forest Service, and by the U. S. Soil Conservation Service, Albuquerque, New Mexico. Forest Service maps are at a scale of $\frac{1}{2}$ mile to 1 inch; Soil Conservation Service maps are at a scale of $\frac{1}{2}$ mile to 1 inch for some quadrangles, and 1 mile to 1 inch for others. Features shown include drainage; sections, townships and other land boundaries; and principal topographic features locally indicated by hachures. Indices to available maps are on file at the Albuquerque offices of the two agencies.

MINERAL RESOURCES MAPS

STATE MAPS

Map of New Mexico showing location of gold, silver, copper, lead and zinc districts. Scale about $32\frac{1}{2}$ miles to 1 inch. Lasky, S. G., and Wootton, T. P., The metal resources of New Mexico and their economic features; State Bureau of Mines and Mineral Resources, Bulletin No. 7, Plate 1, 1933.

Nonmetallic minerals in New Mexico. Scale about 16 miles to 1 inch. Talmage, S. B., and Wootton, T. P., The non-metallic mineral resources of New Mexico and their economic features (exclusive of fuels); State Bureau of Mines and Mineral Resources, Bulletin No. 12, Plate 1, 1937.

Oil and gas map of New Mexico, by Dean E. Winchester. Scale about $10\frac{1}{2}$ miles to 1 inch; 1931. Revised by Robert L. Bates to June 30, 1942. Revised and enlarged by Richard C. Northup and Donald C. Forrey to January 1, 1949. State Bureau of Mines and Mineral Resources. Shows key wildcat locations, principal pool outlines, pipelines, refineries, gasoline plants, and CO₂ ice plants.

Map of New Mexico showing test wells for oil and gas, oil and gas fields, and pipelines, by G. H. Dixon, D. H. Baltz, T. F. Stipp, and R. A. Bieberman. Scale 1:500,000 (about 8 miles to 1 inch); 1955. U. S. Geological Survey, Oil and Gas Investigations Map OM 159.

TOPOGRAPHIC MAPS

STATE MAPS

Topographic map of New Mexico. Scale 1:500,000 (about 8 miles to 1 inch); contour interval 100 meters (328 feet). 1925. (2 sheets.) U. S. Geological Survey, Washington, D. C. (A new topographic map of New Mexico that also shows the highway net is scheduled for release in 1955.)

QUADRANGLE MAPS

Issued by U. S. Geological Survey, Washington, D. C. Through 1950 a total of 154 standard quadrangle maps had been issued for New

Mexico. Individual maps are listed in: Index to topographic mapping in New Mexico; U. S. Geological Survey, Washington, D. C.

The Army Map Service has issued quadrangle maps for certain military reservation areas in New Mexico. Although these maps are not readily available to the public, they are being modified by the U. S. Geological Survey for unrestricted distribution.

SPECIAL MAPS

In addition to the standard quadrangle maps, a number of special topographic maps, issued by the U. S. Geological Survey, Washington, D. C., illustrate local features of national parks, national monuments, mining districts, national forests, and principal river courses. See: Index to topographic mapping in New Mexico; U. S. Geological Survey, Washington, D. C.

AERIAL PHOTOGRAPHS AND MOSAICS

Aerial photographs covering a major portion of the State have been prepared for several federal agencies, among which are the U. S. Soil Conservation Service, the U. S. Forest Service, the U. S. Geological Survey, and the U. S. Corps of Engineers. Most of these photographs are 10- by 10-inch contact prints at scales of from 1:15,840 to 1:60,000. The Soil Conservation Service also issues controlled $7\frac{1}{2}$ -minute and 15-minute mosaics at scales of 1:31,680 ($\frac{1}{2}$ mile to 1 inch) and 1:62,500 (1 mile to 1 inch).

Photo indices on file at the offices of the Cartographic Division, U. S. Soil Conservation Service, Albuquerque, New Mexico, and the Mapping and Cartography Division, U. S. Forest Service, Albuquerque, New Mexico, may be viewed by the public for selecting aerial photographic coverage available from these agencies.

SOURCES OF MAPS AND MAP INFORMATION

Maps published by the U. S. Geological Survey may be ordered from the Geological Survey, Federal Center, Denver, Colorado, and from the New Mexico Bureau of Mines and Mineral Resources, Socorro, New Mexico. Inquiries concerning maps issued by the State Highway Department should be addressed to the department at Santa Fe. The county maps prepared by that department are also sold by the New Mexico Bureau of Mines and Mineral Resources.

Further information concerning maps and aerial photographs and mosaics may be obtained from the Map Information Office, U. S. Geological Survey, Washington, D. C., and the New Mexico Bureau of Mines and Mineral Resources, Socorro, New Mexico.

Publications for Sale by

NEW MEXICO BUREAU OF MINES & MINERAL RESOURCES
CAMPUS STATION — SOCORRO, NEW MEXICO
(Revised July 1, 1955)

PUBLICATIONS OF THE MINERAL RESOURCES SURVEY

BULLETINS

No.	TITLE AND AUTHOR	DATE	PRICE
1	The Mineral Resources of New Mexico; Fayette A. Jones	1915	Out of print
2	Manganese in New Mexico; E. H. Wells.....	1918	Out of print
3	Oil and Gas Possibilities of the Puertecito District, Socorro and Valencia Counties, New Mexico; E. H. Wells	1919	Out of print

PUBLICATIONS OF THE NEW MEXICO BUREAU OF MINES AND MINERAL RESOURCES

BULLETINS

4	Fluorspar in New Mexico; W. D. Johnston, Jr. (Superseded by Bulletin 21).....	1928	Out of print
5	Geologic Literature of New Mexico; T. P. Wootton (Superseded by Bulletin 22).....	1930	Out of print
6	Mining and Mineral Laws of New Mexico; Charles H. Fowler (Superseded by Bulletin 16).....	1930	Out of print
7	The Metal Resources of New Mexico and Their Economic Features; S. G. Lasky and T. P. Wootton.....	1933	Out of print
8	The Ore Deposits of Socorro County, New Mexico; S. G. Lasky	1932	.60
9	The Oil and Gas Resources of New Mexico; Dean E. Winchester (First edition; superseded by Bulletin 18) ..	1933	Out of print
10	The Geology and Ore Deposits of Sierra County, New Mexico; G. Townsend Harley	1934	Out of print
11	The Geology of the Organ Mountains, with an Account of Dona Ana County, New Mexico; Kingsley Charles Dunham	1935	Out of print
12	The Non-Metallic Mineral Resources of New Mexico and their Economic Features (Exclusive of Fuels); S. B. Talmage and T. P. Wootton.....	1936	.50
13	Geology and Economic Features of the Pegmatites of Taos and Rio Arriba Counties, New Mexico; Evan Just	1937	.50
14	Some New Mexico Fusulinidae; C. E. Needham.....	1937	.50
15	The Geology and Ore Deposits of Northeastern New Mexico (Exclusive of Colfax County); G. Townsend Harley	1940	Out of print
16	Mining, Oil, and Mineral Laws of New Mexico; C. H. Fowler and S. B. Talmage (Supersedes Bulletin 6)....	1941	.75
17	Pennsylvanian System in New Mexico; M. L. Thompson	1942	Out of print
18	The Oil and Gas Resources of New Mexico; compiled by Robert L. Bates (Second edition; supersedes Bulletin 9)	1942	Out of print
19	Manganiferous Iron-ore Deposits near Silver City, New Mexico; Lawson P. Entwistle.....	1944	Out of print
20	Stratigraphy of the Colorado Group, Upper Cretaceous, in Northern New Mexico; Charles H. Rankin.....	1944	Out of print

21	Fluorspar Resources of New Mexico; H. E. Rothrock, C. H. Johnson, and A. D. Hahn (Supersedes Bulletin 4).	1946	2.50
22	Geologic Literature of New Mexico Through 1944; Robert L. Bates and Marian R. Burks (Superseded by Bulletin 43)	1945	Out of print
23	Stratigraphy and Oil-producing Zones of the Pre-San Andres Formations of Southeastern New Mexico—A Preliminary Report; Robert E. King.....	1945	Out of print
24	Building Blocks from Natural Lightweight Materials of New Mexico; Donn M. Clippinger.....	1946	.50
25	Mica Deposits of the Petaca District, Rio Arriba County, New Mexico, with Brief Descriptions of the Ojo Caliente District, Rio Arriba County, and the Elk Mountain District, San Miguel County; Richard H. Jahns.....	1946	2.00
26	Geology of the Gran Quivira Quadrangle, New Mexico; Robert L. Bates, Ralph H. Wilpolt, Archie J. MacAlpin, and Georges Vorbe	1947	.60
27	Contributions of New Mexico's Mineral Industry to World War II; compiled by T. D. Benjovsky.....	1947	.50
28	Pumice Aggregate in New Mexico—Its Uses and Potentialities; Donn M. Clippinger and Walter E. Gay.....	1947	Out of print
29	Pre-San Andres Stratigraphy and Oil-producing Zones in Southeastern New Mexico—A Progress Report; E. Russell Lloyd	1949	2.00
30	Pre-Cambrian Geology of the Picuris Range, North-Central New Mexico; Arthur Montgomery.....	1953	1.50
31	Geology of the Thoreau Quadrangle, McKinley and Valencia Counties, New Mexico (includes map); Clay T. Smith	1953	1.00
32	Compilation of State Tax Law Relating to Oil, Gas and Mining Properties in New Mexico; E. P. Ripley (Supersedes Circular 13)	1952	1.50
33	Geologic Section of the Black Range at Kingston, New Mexico; Frederick J. Kuellmer.....	1954	2.00
*36	Mineral Resources of Fort Defiance and Tohatchi Quadrangles, Arizona and New Mexico; John Eliot Allen and Robert Balk	1954	2.50
37	Geology and mineral deposits of Lake Valley Quadrangle, Grant, Luna, and Sierra Counties, New Mexico; Henry L. Jicha, Jr.....	1954	2.00
40	Cambrian Cephalopods; Rousseau H. Flower	1954	1.00
43	Bibliography of New Mexico Geology and Mineral Technology through 1950; Marian R. Burks and John H. Schilling	1955	In press
*44	Mineral Resources of the Navajo Reservation in New Mexico (exclusive of uranium, coal, oil, gas and water); John Eliot Allen	1955	1.00

GROUND-WATER REPORTS

**1	Geology and Ground-Water Resources of the Eastern Part of Colfax County, New Mexico; Roy L. Griggs.....	1948	Out of print
**2	Geology and Ground-Water Resources of San Miguel County, New Mexico; R. L. Griggs and G. E. Hendrickson	1951	2.00

* Prepared under contract for the Bureau of Indian Affairs.

** Prepared in cooperation with the U. S. Geological Survey and the State Engineer of New Mexico.

*3	Geology and Ground-Water Resources of Eddy County, New Mexico; G. E. Hendrickson and R. S. Jones.....	1952	2.50
*4	Geology and Ground-Water Resources of Northeastern Socorro County, New Mexico; Zane Spiegel	1955	In press

OIL AND GAS REPORTS

4-A	New Mexico Oil and Gas Statistical Data for 1948; compiled by E. E. Kinney, Lea County Operators Committee, and New Mexico Oil Conservation Commission.....	1949	1.00
4-B	New Mexico Oil and Gas Engineering Data for 1948, compiled by E. E. Kinney, Lea County Operators Committee, and New Mexico Oil Conservation Commission.....	1949	1.00
4-C	San Juan Basin, New Mexico, Oil and Gas Data Summary Cumulative to January 1, 1949; compiled by E. E. Kinney	1949	Out of print
5-A	New Mexico Oil and Gas Statistical Data for 1949; compiled by E. E. Kinney, Lea County Operators Committee, and New Mexico Oil Conservation Commission.....	1950	Out of print
5-B	New Mexico Oil and Gas Engineering Data for 1949; compiled by E. E. Kinney, Lea County Operators Committee, and New Mexico Oil Conservation Commission	1950	Out of print

CIRCULARS

1	An Outline of the Mineral Resources of New Mexico; E. H. Wells.....	1930	Out of print
2	Geology and Ore Deposits of the Ground Hog Mine, Central District, Grant County, New Mexico; S. G. Lasky	1930	Out of print
3	First, Second, and Third Annual Reports of the Director, and Preliminary Report for the Fourth Year; E. H. Wells	1931	Out of print
4	The Hobbs Field and Other Oil and Gas Areas, Lea County, New Mexico; Dean E. Winchester.....	1931	Out of print
5	Gold Mining and Gold Deposits in New Mexico; E. H. Wells and T. P. Wootton, 1932; revised by T. P. Wootton	1940	No charge
6	Carbon Dioxide in New Mexico; E. H. Wells and A. Andreas (Superseded by Circular 9).....	1938	Out of print
7	Outlook for Further Ore Discoveries in the Little Hatchet Mountains, New Mexico; S. G. Lasky.....	1940	Out of print
8	Selected Bibliography on Coal in New Mexico; Robert L. Bates	1943	No charge
9	Carbon Dioxide in New Mexico; Sterling B. Talmage and A. Andreas (Reprinted from Bulletin 18).....	1942	No charge
10	Natural Light-weight Building-block Materials of New Mexico; T. D. Benjovsky and Donn M. Clippinger.....	1945	Out of print
11	Reconnaissance Survey of the Headstone Mining District, Rio Arriba County, New Mexico; T. D. Benjovsky	1945	Out of print
12	Future Oil Possibilities of New Mexico; Robert L. Bates	1946	Out of print
13	Compilation of State Tax Law Relating to Mineral Properties in New Mexico; E. P. Ripley (Superseded by Bulletin 32)	1946	Out of print
14	Oil and Gas Production Data, Eddy County, New Mexico, 1943-1945; compiled by N. Raymond Lamb and W. B. Macey	1947	Out of print

* Prepared in cooperation with the U. S. Geological Survey and the State Engineer of New Mexico.

- 15 Tables of Fluorescent and Radioactive Minerals; compiled by Robert L. Hershey 1947 No charge
- 16 New Mexico Oil and Gas Production Data for 1946 (Exclusive of Lea County); compiled by N. Raymond Lamb and W. B. Macey 1947 No charge
- 17 Caprock Pool Statistical Report, Chaves and Lea Counties, New Mexico; compiled by N. Raymond Lamb and William B. Macey 1947 Out of print
- 18 Geology and Ore Deposits of Red River and Twining Districts, Taos County, New Mexico—A Preliminary Report; Charles F. Park, Jr., and Philip F. McKinlay 1948 Out of print
- 19-A New Mexico Oil and Gas Statistical Data for 1947; compiled by N. Raymond Lamb and Lea County Operators Committee 1948 Out of print
- 19-B New Mexico Oil and Gas Engineering Data for 1947; compiled by N. Raymond Lamb and Lea County Operators Committee 1948 Out of print
- 20 New Mexico Oil and Gas Summary Data for 1948; compiled by Lea County Operators Committee 1949 Out of print
- 21 Barite of New Mexico; compiled by Donn M. Clippinger 1949 No charge
- 22 Index to Samples from Oil and Gas Well Tests in Library at Socorro, New Mexico; compiled by Robert A. Bieberman and Betty Diddle Revised to January 1, 1955; compiled by Robert A. Bieberman and Florence B. Crespin 1952 Out of print
- 23 Geology and Ore Deposits of a part of the Hansenburg Mining District, Socorro County, New Mexico; Frank E. Kottlowski 1955 No charge
- 24 Subsurface Completion Data of Wells Drilled for Oil and Gas During 1952; compiled by Robert A. Bieberman and Florence B. Crespin 1952 No charge
- 25 Raw Materials for Chemical Industry in New Mexico; Morris F. Stubbs and Robert H. Weber 1953 No charge
- 26 Water Well Records and Well Water Quality in Southwestern San Agustin Plains, Catron County, New Mexico; F. X. Bushman and C. P. Valentine 1954 No charge
- 27 Paragenesis of the Ores of the Palomas (Hermosa) District, Southwestern New Mexico; H. L. Jicha, Jr. 1954 No charge
- 28 Subsurface Completion Data of Wells Drilled for Oil and Gas During 1953; compiled by Robert A. Bieberman and Florence B. Crespin 1954 Out of print
- 29 Occurrences of Uranium Ores in New Mexico; E. C. Anderson 1954 No charge
- 30 Index to Samples From Oil and Gas Well Tests in Library at Socorro, New Mexico; Robert A. Bieberman and Florence B. Crespin 1955 No charge
- 31 Subsurface Completion Data of Wells Drilled for Oil and Gas During 1954; Roy W. Foster and Florence B. Crespin 1955 No charge
- 32 Processing Perlite—The Technologic Problems; Robert H. Weber 1955 No charge
- 33 Possibilities for Discovery of Additional Lead-Silver Ore in the Palomas Camp Area of the Palomas (Hermosa) Mining District, Sierra County, New Mexico; A Preliminary Statement; Richard H. Jahns 1955 No charge

ANNUAL REPORTS

1	For the Fiscal Year July 1, 1945-June 30, 1946; E. C. Anderson	1946	Out of print
2	For the Fiscal Year July 1, 1946-June 30, 1947 (includes Annual Report of State Inspector of Mines); E. C. Anderson	1947	Out of print
3	For the Fiscal Year July 1, 1947-June 30, 1948 (includes Annual Report of State Inspector of Mines); E. C. Anderson	1948	Out of print
4	For the Fiscal Year July 1, 1948-June 30, 1949 (includes Annual Report of State Inspector of Mines); E. C. Anderson	1949	Out of print
5	For the Fiscal Year Ending June 30, 1950; Eugene Callaghan	1950	Out of print
6	For the Fiscal Years Ending June 30, 1951 and 1952; Eugene Callaghan	1952	Out of print
7	For the Fiscal Years Ending June 30, 1953 and 1954; Eugene Callaghan	1954	No charge

MAPS

Oil and Gas Map of New Mexico; revised and enlarged to Jan. 1, 1949, by Richard C. Northup and Donald D. Forrey. Scale about 10½ miles to 1 inch	1949	1.50
Map showing location of wells and springs and the availability of ground water in San Miguel County, New Mexico. (This map is included in Ground-Water Report 2.)	1951	.35
Geology of San Miguel County. (This map is included in Ground-Water Report 2.)	1951	.35
Geologic Map and Section of the Thoreau Quadrangle, New Mexico. (This map is included in Bulletin 31.)	1953	.75
Preliminary Geologic Map of Puertecito Quadrangle, Socorro County, New Mexico; William H. Tonking	1954	.75
Geologic Section of Black Range at Kingston, New Mexico. (This map is included in Bulletin 33.).....	1954	.50
Geologic Map and Sections of Lake Valley Quadrangle, New Mexico. (This map is included in Bulletin 37.) ...	1954	.80

PETROLEUM EXPLORATION MAPS

These maps show the location of all tests for oil and gas (both completed and in the process of drilling), section lines, and the larger towns; published as blue line prints at a scale of two miles to the inch; prepared by Robert A. Bieberman and Roy W. Foster—Counties available: Colfax, Curry, DeBaca, Guadalupe, Harding, Quay, Roosevelt, and Socorro	1955	1.00 (each county)
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WELL LOGS

More than 6,950 typed driller's logs of wells drilled in New Mexico	Prices on request
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GUIDEBOOKS

Santa Fe, New Mexico (Scenic Trips to the Geologic Past No. 1); Brewster Baldwin and Frank E. Kottlowski	1955	No charge
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**PUBLICATIONS OF THE U. S. GEOLOGICAL SURVEY,
FOR SALE BY THE NEW MEXICO BUREAU OF MINES
AND MINERAL RESOURCES**

BULLETINS

973-F	Fluorspar Deposits of Burro Mountains and Vicinity, New Mexico; Elliot Gillerman	1951	1.50
1009-B	Identification and Occurrence of Uranium and Vanadium Minerals from the Colorado Plateaus; A. D. Weeks and M. E. Thompson	1954	.25

PROFESSIONAL PAPER

*200	Geology and Ore Deposits of the Magdalena Mining District, New Mexico; G. F. Loughlin and A. H. Koschmann	1942	2.00
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CIRCULAR

*333	Records of Wells Drilled for Oil and Gas in New Mexico; G. H. Dixon, D. H. Baltz, T. F. Stipp, and R. A. Bieberman	1954	No charge
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WATER-SUPPLY PAPER

1230	Ground-water Conditions in the Rincon and Mesilla Valleys and Adjacent Areas in New Mexico; Prepared in cooperation with the Elephant Butte Irrigation District	1954	1.50
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BOOKLET

Prospecting for Uranium; published in cooperation with the United States Atomic Energy Commission	1951	.55
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MAPS AND CHARTS

Geologic Map Index of New Mexico; Leona Boardman and Annabel Brown. Scale 1:750,000	1950	.70
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Base Map of New Mexico. Scale about 8 miles to 1 inch	1922	.25
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Reconnaissance and Elevation Map of Southeastern New Mexico; Walter B. Lang. Scale 4 miles to 1 inch	1953	1.50
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Stratigraphic Distribution of the Pennsylvanian Fusulinidae in a Part of the Sierra Nacimiento of Sandoval and Rio Arriba Counties, New Mexico; Lloyd G. Henbest and others. <i>Preliminary Chart 2, Oil and Gas Investigations</i>	1944	.25
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Maps Showing Thickness and General Character of the Cretaceous Deposits in the Western Interior of the United States; J. B. Reeside, Jr. About 8 miles to 1 inch; contour interval 100. Scale 225 miles to 1 inch. <i>Preliminary Map 10, Oil and Gas Investigations</i>	1944	.25
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Geology and Asphalt Deposits of North-central Guadalupe County, New Mexico; Joseph M. Gorman and Raymond C. Robeck. Scale 1 mile to 1 inch. <i>Preliminary Map 44, Oil and Gas Investigations</i>	1946	.60
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Luccero Uplift, Valencia, Socorro, and Bernalillo Counties, New Mexico; V. C. Kelley and G. H. Wood. Scale 3 miles to 1 inch. <i>Preliminary Map 47, Oil and Gas Investigations</i>	1946	.60
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* Prepared in cooperation with the New Mexico Bureau of Mines and Mineral Resources.

Stratigraphic Relations of Eocene, Paleocene, and Latest Cretaceous Formations of Eastern Side of San Juan Basin, New Mexico; C. H. Dane. <i>Preliminary Chart 24, Oil and Gas Investigations</i>	1946	.35
Geologic Maps of a Part of the Las Vegas Basin and of the Foothills of the Sangre de Cristo Mountains, San Miguel and Mora Counties, New Mexico; S. A. Northrop, H. H. Sullwold, Jr., A. J. MacAlpin, and C. P. Rogers, Jr. Scales, $\frac{2}{3}$ mile to 1 inch and 4 miles to 1 inch. <i>Preliminary Map 54, Oil and Gas Investigations</i>	1946	.60
Geology of Nacimiento Mountains, San Pedro Mountain, and Adjacent Plateaus in Parts of Sandoval and Rio Arriba Counties, New Mexico; S. A. Northrop and G. H. Wood. Scale $1\frac{1}{2}$ miles to 1 inch. <i>Preliminary Map 57, Oil and Gas Investigations</i>	1946	.60
*Geology of Northwestern Quay County, New Mexico; Ernest Dobrovolny, C. H. Summerson, and Robert L. Bates. <i>Preliminary Map 62, Oil and Gas Investigations</i>	1946	.75
Geologic Map of Part of Eastern San Juan Basin, Rio Arriba County, New Mexico; C. H. Dane. <i>Preliminary Map 78, Oil and Gas Investigations</i>	1947	1.00
Stratigraphy and Geologic Structure in the Piedra River Canyon, Archuleta County, Colorado; C. B. Read, G. H. Wood, A. A. Wanek, and Pedro Verastequi Mackee. Scale 1 mile to 2 inches. <i>Preliminary Map 96, Oil and Gas Investigations</i>	1949	.80
Pre-Pennsylvanian Geology of Southwestern Kansas, Southeastern Colorado, and the Oklahoma Panhandle; John C. Maher and Jack B. Collins. <i>Preliminary Map 101, Oil and Gas Investigations</i>	1949	1.00
Geology and Coal Resources of the Durango Area, La Plata and Montezuma Counties, Colorado; A. D. Zapp. Scale 1 mile to 2 inches. <i>Preliminary Map 109, Oil and Gas Investigations</i>	1949	1.00
*Geology of the Region from Socorro and San Antonio east to Chupadera Mesa, Socorro County, New Mexico; R. H. Wilpolt and A. A. Wanek. Scale 1 inch to 1 mile. <i>Map OM121, Oil and Gas Investigations</i>	1952	.80
Permian and Pennsylvanian Rocks of Southeastern Colorado and Adjacent Areas; John C. Maher and Jack B. Collins. Scale about 11 miles to 1 inch. <i>Map OM135, Oil and Gas Investigations</i>	1953	.75
Geology of a Part of Northwestern Mora County, New Mexico; George O. Bachman. Scale 2 inches to 1 mile. <i>Map OM137, Oil and Gas Investigations</i>	1953	.50
Geologic Map of Lake Valley Manganese District, Sierra County, New Mexico; S. C. Creasey and A. E. Granger. Scales 200 feet to 1 inch and 100 feet to 1 inch. <i>Field Studies Map MF9, Mineral Investigations</i>	1953	.50
Geology and Stratigraphy of Koehler and Mount Laughlin Quadrangles and Parts of Abbott and Springer Quadrangles, Eastern Colfax County, New Mexico; G. H. Wood, Jr., S. A. Northrop, and R. L. Griggs. Scale 1 inch to 1 mile. <i>Map OM141, Oil and Gas Investigations</i>	1953	1.00

* Prepared in cooperation with the New Mexico Bureau of Mines and Mineral Resources.

Geology of the Beautiful Mountain Anticline, San Juan County, New Mexico; E. C. Beaumont. Scale 1 $\frac{1}{8}$ inches to 1 mile. <i>Map OM147</i> , Oil and Gas Investigations	1954	.50
Geology and Fuel Resources of the Red Mesa Area, La Plata and Montezuma Counties, Colorado; Harley Barnes, E. H. Baltz, Jr., and P. T. Hayes. Scale 1 inch to 1 mile. <i>Map OM149</i> , Oil and Gas Investigations	1954	.50
Geologic Map of the Mesa Verde Area, Montezuma County, Colorado; A. A. Wanek. Scale 1 inch to 1 mile. <i>Map OM152</i> , Oil and Gas Investigations	1954	.50
Tectonic Map of a Part of the Upper Rio Grande Area, New Mexico; V. C. Kelley. Scale 1 inch to 3 miles. <i>Map OM157</i> , Oil and Gas Investigations	1954	.50
Map Showing Geologic Structures of the Southern Part of the San Juan Basin, including Parts of San Juan, McKinley, Sandoval, Valencia, and Bernalillo Counties, New Mexico; compiled by C. B. Hunt and C. H. Dane. Scale 1 inch to 2 miles. <i>Map OM158</i> , Oil and Gas Investigations	1954	.50
Map of New Mexico Showing Test Wells for Oil and Gas, Oil and Gas Fields, and Pipelines; G. H. Dixon, D. H. Baltz, T. F. Stipp, and R. A. Bieberman. Scale 1:500,000. <i>Map OM159</i> , Oil and Gas Investigations	1954	.75
Total Intensity Aeromagnetic Map of Parts of Guadalupe and De Baca Counties, N. M. (R. 21 E.-R. 26 E. and T. 3 N.-T. 6 N.); W. J. Dempsey and M. E. Hill. Scale 1 inch to 1 mile; contour interval 10 gammas. <i>Map GP 15</i> , Geophysical Investigations	1950	.20
Total Intensity Aeromagnetic Map of Parts of Guadalupe and De Baca Counties, N. M. (R. 16 E.-R. 21 E. and T. 3 N.-T. 6 N.); W. J. Dempsey and M. E. Hill. Scale 1 inch to 1 mile; contour interval, 10 gammas. <i>Map GP 16</i> , Geophysical Investigations	1950	.20
Total Intensity Aeromagnetic Map of Parts of San Miguel and Guadalupe Counties, N. M. (R. 21 E.-R. 25 E. and T. 6 N.-T. 12 N.); W. J. Dempsey and M. E. Hill. Scale 1 inch to 1 mile; contour interval, 10 gammas. <i>Map GP 17</i> , Geophysical Investigations	1950	.20
Total Intensity Aeromagnetic Map of Parts of San Miguel and Guadalupe Counties, N. M. (R. 16 E.-R. 21 E. and T. 6 N.-T. 10 N. and part of Anton Chico Grant); W. J. Dempsey and M. E. Hill. Scale 1 inch to 1 mile; contour interval, 10 gammas. <i>Map GP 18</i> , Geophysical Investigations	1950	.20
Geology and Fuel Resources of the Upper Cretaceous Rocks of the Barker Dome-Fruitland Area, San Juan County, New Mexico; P. T. Hayes and A. D. Zapp. Scales 1 mile to 1 inch; $\frac{1}{2}$ mile to 1 inch. <i>Map OM 144</i> , Oil and Gas Investigations	1955	.50
Topographic maps of approximately 270 quadrangles in New Mexico and adjacent parts of Arizona, Colorado, and Texas. Scales range from 1,000 feet to 1 inch, to 4 miles to 1 inch20 each

PUBLICATION OF THE U. S. ATOMIC ENERGY COMMISSION,
 FOR SALE BY THE NEW MEXICO BUREAU OF MINES
 AND MINERAL RESOURCES

Prospecting with a Counter; Robert J. Wright	1954	.30
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PUBLICATIONS OF THE UNIVERSITY OF NEW MEXICO,
 FOR SALE BY THE NEW MEXICO BUREAU OF MINES
 AND MINERAL RESOURCES

Geology and Economics of New Mexico Iron-Ore Deposits; V. C. Kelley; prepared in cooperation with the U. S. Geological Survey	1949	3.00
Geology of the Caballo Mountains; Vincent C. Kelley and Caswell Silver	1952	2.50
Regional Tectonics of the Colorado Plateau and Relationship to the Origin and Distribution of Uranium; Vincent C. Kelley (with map)	1955	2.00

MAPS

Mining Districts of New Mexico; Stuart A. Northrop. Scale 20 miles to 1 inch	1942	1.00
Tectonic Map of the Colorado Plateau Showing Uranium Deposits; Vincent C. Kelley. Scale 16 miles to 1 inch	1955	1.00

PUBLICATION OF U. S. SOIL CONSERVATION SERVICE,
 FOR SALE BY THE NEW MEXICO BUREAU OF MINES
 AND MINERAL RESOURCES

New Mexico Land Status Map. Scale 20 miles to 1 inch	1941	1.00
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PUBLICATIONS OF THE NEW MEXICO GEOLOGICAL SOCIETY

(Checks should be made payable to New Mexico Geological Society
 for the following Guidebooks—address Campus Station, Box 27,
 Socorro, New Mexico)

1	Guidebook of the First Annual Field Conference, covering North and East Sides of the San Juan Basin	1950	Out of print
2	Guidebook of the Second Annual Field Conference, covering South and West Sides of the San Juan Basin, New Mexico & Arizona	1951	5.00
3	Guidebook of the Third Annual Field Conference, covering Rio Grande Country—Central New Mexico	1952	5.00
4	Guidebook of the Fourth Field Conference, covering Southwestern New Mexico	1953	5.00
5	Guidebook of the Fifth Field Conference, covering Southeastern New Mexico	1954	5.00